



LACUS FORUM XXXVIII

Applying Theories of Communicating



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Editors of Volume XXXVIII

Patricia C. Sutcliffe
German Historical Institute
1607 New Hampshire Ave NW
Washington, DC 20009, U.S.A.

Daniel Mailman
Studio Mindstride
Chattanooga, Tennessee, U.S.A.

William J. Sullivan
Marie Curie-Skłodowska University
Pl. M. Curie-Skłodowska 5
20-400 Lublin, Poland

Douglas W. Coleman
University of Toledo, Ohio (emeritus)
3638 Shamrock Drive, Toledo, OH 43615, U.S.A.

Formatting Team

Suzy Bills, Director
Faculty Publishing Services
Brigham Young University
Provo, Utah 84602, U.S.A.

Editing Interns, Brigham Young University
Annie Petersen
Eden Buchert
Emma Ebert

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PREFACE

THE THIRTY-EIGHTH ANNUAL MEETING OF THE LINGUISTICS SOCIETY OF CANADA AND THE UNITED STATES WAS HELD AUGUST 9 TO 12, 2011 at The University of Toledo in Toledo, Ohio. The conference theme was “Applying Theories of People Communicating,” referring to new ways of inquiry that have become part of the LACUS universe, where people communicating are at the center of inquiry into the real world, rather than into language as an abstract object. Contributions were especially welcomed that dealt with theories of people communicating within their real-world environments. Of course, in keeping with longstanding LACUS tradition, papers were welcome from any area of linguistics, both abstract and empirical, theoretical and applied. Contributions came from a very broad spectrum of disciplinary backgrounds, encouraging healthy debate and the friendly presentation of often radically differing perspectives on the best way(s) to describe how the human ability to communicate is organized in the brain and in how that ability manifests itself in our real-world social interactions.

The University of Toledo, one of 13 state universities in Ohio, was established in 1872 and became a member of the state university system in 1967. The University of Toledo and the Medical University of Ohio merged July 2006 to form the third-largest public university operating budget in the state. Most LACUS XXXVIII events were held in one of the two original buildings — The Memorial Field House, a state-of-the-art classroom center and home to both the Department of English and the Department of Foreign Languages.

The invited speaker at LACUS XXXVIII was Brian D. Joseph of Ohio State University, whose presentation was titled “Towards a Variationist Interpretation of Data.” Joseph is Distinguished University Professor of Linguistics and Kenneth E. Naylor Professor of South Slavic Linguistics at OSU.

The papers included in this volume have gone through a two-step review process. First, the review of abstracts submitted to the conference; second, the review of submitted manuscripts. Referees for the first step were members of the LACUS Board of Directors and members of the Program Committee. Reviewers for the second step were the members of the Publications Committee. At both stages, continuing the LACUS tradition, reviewers not only recommended acceptance or rejection. Rather, they offered extensive help, where needed, to authors whose abstracts or manuscripts could use improvement. Almost all manuscripts were significantly revised after the conference before being submitted for publication, with authors strongly encouraged to take into account the lively and constructive conversations that are the hallmark of LACUS meetings.

The co-editors would like to offer special thanks to Dan Mailman for laying out this volume. As well, sincere thanks is due to all anonymous peer reviewers who took time out of their busy professional lives to perform the task of assuring the quality of the manuscripts that became the articles you are reading here. Thanks to the staff and supporters of the Toledo Museum of Art for providing a wonderful experience to our conference delegates. Finally, a big thank you to the

student volunteers (Josh Paiz and Kasumi Yamazaki) who did so much to make the LACUS conference at The University of Toledo a success.

-Douglas W. Coleman, September 2011

IN MEMORIAM—VICTOR H. YNGVE

VICTOR H. YNGVE was a founding member of the Linguistic Association of Canada and the United States (1974) who served as its president from 1984 to 1985. He remained active in LACUS almost until the time of his death in January 2012.

It is worth noting that he did not come to linguistics as many have, from study in a foreign language, literature, social science, or philosophy. His Ph.D. from the University of Chicago dealt with particle physics. He developed an interest in the field of machine translation, which was attracting a great deal of public attention in the early to mid 1950's. It was this interest which led him to join the machine translation project at MIT. He founded the journal *Mechanical Translation* in 1954. He was a founder of the Association for Machine Translation and Computational Linguistics (in 1962) and served as its first president. *Mechanical Translation*, under that organization, became *Mechanical Translation and Computational Linguistics*, which he continued to edit for some time. He designed the programming language COMIT in the late 1950's. It was the earliest computer language developed specifically for string processing and led to the creation of SNOBOL at Bell Laboratories in the mid-1960's. To recognize his work in the field, Indiana University Bloomington has honored Yngve with the Victor H. Yngve Endowed Professorship of Information Science since 1998. Yngve is widely remembered for the "Depth Hypothesis," which came out of his work on COMIT and machine translation (Hutchins 2012:463), relating syntactic processing needs to short-term memory limitations (Miller, 1956). Outside of LACUS, Yngve is remembered primarily as a computational linguist and theoretician in syntax.

However important this work was, it was for Yngve merely a prelude. Yngve's work in machine translation convinced him that a linguistics that studies language cannot rest on a scientific foundation. Trying to solve practical problems of translation time and again pointed up the limitations of focusing on word meanings and grammatical structures. Yngve realized this was happening because linguists assumed them to be in the text, rather than projected onto the text by people. He realized that the focus needed to be on the real world — on people communicating in their environment. After a series of seminal papers, several published in the *LACUS Forum*, his first in-depth formulation of Human Linguistics appeared in *Linguistics as a Science* (Yngve 1986). Ten years later, a much more fully developed version of the framework was published in *From Grammar to Science: New foundations for general linguistics* (Yngve 1996). (It was there that he showed that his own Depth Hypothesis had been based on unwarranted and untenable assumptions.) Throughout the 1980's and 1990's, he continued to present papers questioning the field's claims to scientific status and attempted to stir debate on the foundations of linguistics through a newsletter, *Communications of the Workshop on Scientific Linguistics*. His work later led to a book titled *Hard-science Linguistics*, co-edited with Zdzisław Wąsik (Yngve and Wąsik, 2004). It includes the work of a number of the linguists he mentored over the years.

It is interesting to note that Wikipedia's (2016) article describes Yngve as if his career ended in about 1965, immediately after his work on the Depth Hypothesis. It is also interesting to note how his work on Human (a.k.a., Hard Science) Linguistics is described elsewhere. For example, Zwicky (2012), in a very sympathetic blog post on Yngve's death, noted that Yngve "embraced an approach to *language* science directly modeled on physics." In describing the Victor H. Yngve Endowed Professorship, the Indiana University Bloomington School of Informatics and Computing refers to his having made "a powerful case for the scientific study of *language*" (*SoIC News* 2007). One of his publishers, Bloomsbury Continuum, describes his areas as "*semantics* and *pragmatics*" (both of which are defined in terms of language). [In all cases, the emphasis is added.] These references are puzzling, since Yngve spent decades offering powerful arguments that it is unscientific to view speech communication as "use of language." He argued that instead of reifying the logical abstraction of language we should focus on the reality of the people, objects in their environment, general aspects of the environment as a whole, and the flow of physical energy (such as the sound of speech, light waves that allow people to see gestures, and so on). A review of his *Linguistics as a Science* (1986) by Kaye (1989) shows how difficult it is for so many to overcome such unwarranted assumptions. Yngve (1986) contained repeated pleas that linguistics set aside language as a focus, and instead look at the *people communicating* as part of the physical world. Kaye says, "I am not sure we can separate language from 'the communicative aspects of people' to the extent Yngve wishes to do this, unless we are talking strictly about paralanguage and kinesics alone as distinct from language" (1989:248). To Kaye, to set aside language meant to set aside people speaking, because he was unable to see speaking in terms of its physical aspects alone; he could not help imposing ancient assumptions about language when he looked at people communicating. Yngve himself gave a much better reply to Kaye's misinterpretations and outright misrepresentations of the 1986 book than I can here. See Yngve (1990), in which he replied to Kaye's review.

Yngve's work clearly aroused powerful reactions in many of his critics over the years. Another example is ten Hacken's (1997) review of Yngve's *From Grammar to Science*, which contained a few blatant misrepresentations of Yngve arguments and conclusions. (See Coleman 2001 for a reply to these aspects of ten Hacken's review.) Despite some of these reactions, Yngve was, it seemed to me, eternally patient and rational in his own replies to his critics. I count myself lucky to have been among those who could turn to Yngve when I had questions not only about the foundations of linguistics, but about specific work that I was engaged in.

The most unbiased and complete review I have encountered of Yngve's career can be found in Hutchins (2012) retrospective, which I have relied on for some of the biographical background here. Even there, however, we are told that Yngve's books and articles "deserve to be essential reading... for anyone concerned with the general health of current and future studies of *language* and communication" (1998:466). It would be a fitting legacy to Yngve if all of us could really step back and ask ourselves whether we merely want to cling to the ancient folklore of language and *say* we are doing science, or really *do* it. I have to admit that it has been difficult for me to accomplish this, and it would have been impossible without Vic Yngve to help.

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THE ROLE OF PERSON IN A DEPENDENCY GRAMMAR

JOHN HEWSON

Memorial University of Newfoundland

Abstract: There is a long established principle that there are three, and only three, stages of dependency in syntax: Primary, Secondary, and Tertiary, as in very good work (Tertiary > Secondary > Primary). Tertiaries have been defined as elements supported by Secondaries, and Secondaries as elements supported by Primaries, but no satisfactory definition of Primary has traditionally been offered, a failure which has sometimes been considered a critical weakness of Dependency Syntax. Adapting terminology developed by Gustave Guillaume, we propose that Tertiaries are incident to Secondaries, Secondaries incident to Primaries, and that Primaries have internal incidence to a distinctively different element that was originally identified by the ancient grammarians under the name of “Person”. This article examines the nature of Person in the substantive noun, and then proceeds to investigate the way that it affects the grammatical relations of Adjective + Noun in English, French, and German.

Keywords: dependency, syntax, external incidence, internal incidence, adjective, noun, paradigm, agreement, person

Languages: French, German, Latin, English

IT IS IMPORTANT to insist that language is a mental phenomenon, and cannot be adequately described as a physical or behavioural phenomenon, as in the definitions of early to mid 20th century positivists. Nor is it adequate to reduce it to an abstract algebra that supposedly exists independently of the speaker. A language does not exist independently of those who speak it, and the scientific investigation of linguistic phenomena consequently cannot ignore such mentally stored linguistic knowledge as the speaker's total vocabulary: some 6,000 items for the 5 year old starting school, and normally having a limit of about 50,000 for highly educated individuals. What is stored mentally includes also phonology and grammar; without which there would be no language. The speaker must have a phonological system whose stability is guaranteed by sets of closed contrasts shared with the rest of the community. It will be demonstrated in what follows that there are similar closed systems (content systems) of grammatical meaning marked by paradigms of morphological forms, also shared by the rest of the community, and amenable only to systemic change, atomistic change being possible in the paradigm, but not in the content

system¹. Such stored content is not an inaccessible abstraction; it is accessible to physical intervention as reported by the neurosurgeons (Penfield & Roberts 1959) and amenable to reconstruction by the comparative method, one of the oldest and most widely practised of scientific methods, already familiar to linguists from two centuries of extensive work in Historical and Comparative Linguistics.

Hoenigswald, in fact, has shown us (1960) that the phonemes of a modern language, theoretical entities which are not directly observable, must be reconstructed from the phonetic record in the same way that the phonemes of a prehistoric language (equally theoretical) can be reconstructed from the data of daughter languages. Sapir, in his classic article “The Psychological Reality of Phonemes” (1933; 1968) gives an exposition of the use of the comparative method in the reconstruction of the phonology of Southern Paiute from a rather surprising range of allophones. In both cases what is reconstructed is a fully coherent system that is typically based on sets of binary contrasts.

1. THREE MORPHOLOGICAL SETS. The same methods also work in morphology, with a similar kind of product: paradigms of verbal and nominal systems. A paradigm reconstruction of the Latin verb shows contrasts of Tense, Aspect, Mood, and Voice, and reconstruction of the Latin nominal system is based on contrasts of Number, Gender, and Case. The ancients, in fact, had already noted that in Indo-European (IE) languages there were three kinds of words: (i) those that had a nominal morphology; (ii) those that had a verbal morphology, and (iii) those that had no grammatical morphology of their own: adverbs, particles, prepositions, conjunctions. Plato is said to have been the first to use the terms *ὀνόμα* (ónoma) ‘name’ and *ῥῆμα* (rhêma) ‘verb’ for the nominal and verbal forms respectively, with their different morphological sets. Aristotle added a third class of syntactic component, *σύνδεσμοι* (sýndesmoi) ‘links’, the linking elements (Robins 1967:26), the adverbs, particles, etc., that have no distinctive class morphology.

Much of the ancient IE nominal and verbal morphology was extant in Old English, but was severely reduced in the Middle English period; the grammatical morphology of Modern English is consequently minimal. The 36 different paradigmatic contrasts (Sweet 1882; 1953:17–18) of the OE adjective, for example, have all been reduced to a single paradigmatic form in MnE.

These three morphological categories, (i) the nominal, the verbal, and the unmarked, are found not only in Indo-European languages, but extensively elsewhere in the languages of the world, to a point that, if not a universal², it could be considered a norm for a language to have three categorial sets: one showing nominal inflections, a second showing verbal inflections, and a third lacking inflections. These are, for example, the three common grammatical sets that we find in the native languages of North America.

1.1. THREE LEVELS OF SYNTACTIC PREDICATION. THE ancient European grammarians also operated with a simple Dependency Syntax. An IE verb would be predicated of its subject, and if the subject were singular or plural, the verb would be singular or plural by agreement³. An adjective was typically predicated of a nominal, and agreed with the nominal in number, gender, and case. Adverbs could be predicated of a verb, an adjective, or another adverb, but not of a

¹ The shift from ME *holpen* to MnE *helped*, a regularization of a paradigmatic form, in no way affects the meaning or function of the English Past Participle.

² It can be argued, for example, that Chinese does not (explicitly) have such categories.

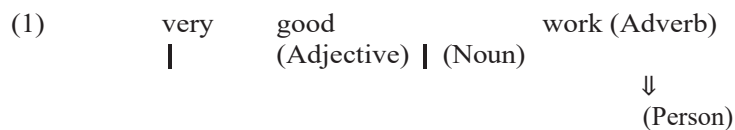
³ In the earliest forms of IE, subjects were incorporated into the finite verb, and marked in its inflections. Latin for example has six persona inflections on the finite verb: three singular (*-o*, *-s*, *-t*) and three plural (*-mus*, *-tis*, *-nt*), which play the role of personal pronouns.

noun. The result is three levels of predication, the nominals forming syntactic primaries, verbs and adjectives forming syntactic secondaries, and adverbs forming tertiaries, as described by the Danish linguist Otto Jespersen in his remarkable 1924 book, *The Philosophy of Grammar*.

Jespersen's Chapter Seven (1924:96–107) is entitled *The Three Ranks*, in which he showed that when words are combined there is a main word, a Primary, and two levels of subordination, which he called Secondary and Tertiary.

1.2 THREE RANKS AS THE PRODUCT OF THREE PROCEDURES. Jespersen was not totally successful in defining the elements that he called Primary, Secondary, and Tertiary: “in the combination extremely hot weather the last word weather, which is evidently the chief idea, may be called primary; hot, which defines weather, secondary, and extremely, which defines hot, tertiary” (1924:96). It was easy enough to define the Tertiary as any element that could be predicated of a Secondary, and equally simple to define the Secondary as any element that could be predicated of a Primary. But there was no such simple solution to the definition of Primary, and Jespersen suffered a certain amount of criticism for his failure to make his definitions completely explicit.

Gustave Guillaume, in a similar but later discussion (1984:119ff), speaks of the adjective being incident to the noun, and the adverb being incident to the adjective. This emphasizes process; it means that the adjective finds its support in the noun, and the adverb finds its support in the adjective. Guillaume observes that there are two types of support: external, as in the adverb and the adjective, and internal for the noun. In other words, Jespersen failed to see that there is actually an extra element in the noun, missing in the adverb and the adjective, which allows for an internal, instead of an external predication. Guillaume even goes so far as to say: “the logical person is present in the substantive, and can be considered absent in the adjective” (1984:122). These relationships are represented in (1), using the example *very good work*.



The horizontal arrows represent external incidence; the vertical arrow indicates the internal incidence of the noun lexeme to the element of person. The rudimentary nature of this figure must be emphasized; it is a base for further elements to be added. It does, however, show the noun, with its internal support, as the fundamental base of all syntactic dependencies. There is no doubt (it has been known for millennia), that in the phrase *very good work*, *very* brings its meaning to *good*, and *good* likewise brings its meaning to *work*. What is new is the insight that *work* necessarily brings its meaning to some kind of internal support, and the suggestion that it is this element that was given the designation *person* by the ancient grammarians. In other words, in the production of a noun, a lexeme, a linguistic meaning, is predicated of a non-linguistic person, and this element of person, once it is labeled by the lexeme of the noun, becomes a linguistic element, the person of the noun, essential to the noun but normally lacking in the adjective, which is why the adjective has no number and gender of its own, but assimilates (in languages that have such agreements) the gender and number of the noun, both of which are dependent on the element of person.

It is obvious, for example, that linguistic number never pluralizes the noun lexeme: *two boys* does not mean two lexemes, it means two individuals represented by a single lexeme that is marked grammatically as 3rd person plural. It is the persons, the individuals, that are plural, not

the lexeme. But the question has to be asked: what are these two individuals, these two boys, these non-linguistic persons, and how do they become incorporated into the mental structure of a substantive noun? The answer is actually quite simple, as one would expect it to be, if it is going to make good sense. It can, in fact, be expressed in a single sentence as in (2).

- (2) Any item of information that occupies space in the mind can become a linguistic person.

50 years ago such a statement could justifiably have been dismissed as speculative nonsense. But the psychological experimentation of the late twentieth century, especially on the capacity of the working memory (e.g., George Miller, 1956), shows that there is, in fact, space in the mind, and it can, to a certain extent, be measured. It was Miller who determined that the Working Memory, which automatically records the stream of consciousness, whether we like it or not, and allows us to review and to repeat what has just been recorded, has a limit of seven items of information, plus or minus two. In other words the Working Memory is not something subjective, a matter of choice, but an entirely mechanical and automatic operation of the human mind, with a memory storage of approximately seven digits of information. And in the third millennium the whole question of memory storage is not a mystery at all, but an item of everyday practical discussions involving such terms as megabyte and gigabyte.

Our two boys, for example, if observed, immediately become percepts recorded in the Working Memory of the observer. Later they may be elements of stored memory, the memory of recall. It is equally possible to have two boys who are the figment of a novelist's imagination. All of these are cognitive realities that when labeled linguistically, allow for the creation of a substantive noun. The reality of the element of person in the noun may be observed, for example, in the morphology and syntax of adjective and noun in different Indo-European languages. In what follows, it will be shown that significant syntactic contrasts are entirely dependent upon the grammatical element of person.

2. THE RELATIONSHIP OF ADJECTIVE AND NOUN. The relationship of adjective to noun differs significantly from language to language. In seeking to understand what is meant by the expression grammatical person, an entity on which Guillaume comments frequently⁴ in the *Leçons de linguistique*, we may examine some of these differences in adjectival syntax, beginning with generalities, and then proceeding to a closer examination of adjectives in French, German, and English.

Adjectives are not particularly frequent, as a part of speech, in the languages of the world (Dixon 1977). Where they are found they may be a just a small group, some times less than a dozen: the rich abundance of adjectives found in Indo-European languages is unusual. The most common adjectives in the languages of the world appear to represent qualities of the parameters of time and space: new/old, big/small, long/short, high/low. What are normally adjectival elements in IE languages, such as adjectives of colour, for example, frequently show up elsewhere in the world as stative verbs.

What is notable about the Indo-European adjectives is that they have the same morphology of number, gender, and case, as do nouns, but having no inherent gender, they adopt the lexical gender of the substantive to which they are predicated (along with its grammatical number and grammatical case), as exemplified in (3) by the using the adjective *bonus*, *bona*, *bonum* 'good'

⁴ A substantial collection of these comments has been made by Walter Hirtle.

with the nouns *puer* ‘boy’, *puella* ‘girl’, and *baculum* ‘stick’ representing the three different genders.

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|-----|---|-----------------------------------|
| (3) | Masc. <i>bonus puer</i> ‘a good boy’ | <i>boni pueri</i> ‘good boys’ |
| | Fem. <i>bona puella</i> ‘a good girl’ | <i>bonae puellae</i> ‘good girls’ |
| | Neut. <i>bonum baculum</i> ‘a good stick’ | <i>bona bacula</i> ‘good sticks’ |

Adjectives in IE languages may, however, be substantivized, and become nouns themselves, with different results in different IE languages, according to the degree of historical preservation of the parameters of number, gender, and case. Latin adjectives, for example, can very simply be nominalized, taking on a generic sense that is relevant to the gender and number, as in (4).

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|-----|-----------------------------------|---------------------------|
| (4) | Masc. <i>bonus</i> ‘a good man’ | <i>boni</i> ‘good men’ |
| | Fem. <i>bona</i> ‘a good woman’ | <i>bonae</i> ‘good women’ |
| | Neut. <i>bonum</i> ‘a good thing’ | <i>bona</i> ‘good things’ |

French, which has lost case in the noun, and also the neuter gender, but has maintained number, shows adjective agreement with two numbers and two genders, as in (5).

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|-----|-----------------------------|-------------------------|
| (5) | <i>un monsieur grand</i> | ‘a tall gentleman’ |
| | <i>des messieurs grands</i> | ‘(some) tall gentlemen’ |
| | <i>une dame grande</i> | ‘a tall lady’ |
| | <i>des dames grandes</i> | ‘(some) tall ladies’ |

French adjectives can also be very simply nominalized by the use of articles and the grammatical categories of gender and number. *Un vieux monsieur*, for example is ‘an old gentleman’, whereas *un vieux* represents anything old that happens to be masculine, so that (6) represents typical usage.

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| (6) | <i>un vieux</i> ‘an old man’ | <i>des vieux</i> ‘(some) old men’ |
| | <i>le vieux</i> ‘the old man’ | <i>les vieux</i> ‘(the) old men’ |
| | <i>une vieille</i> ‘an old woman’ | <i>des vieilles</i> ‘(some) old women’ |
| | <i>la vieille</i> ‘the old woman’ | <i>les vieilles</i> ‘(the) old women’ |

It should be noted that in translating these into English we cannot say *an old; *un vieux* is not ‘an old’. One needs to add a noun, as in the translations given, or at least a pronoun: an old one. In English one needs to replace, suppletively, at least one of the three parameters of person that were lost from the adjective paradigms of Old English, in order to translate *un vieux*, *une vieille*. In order to produce the gender difference, nouns are normally used, as already noted in (4) above; otherwise the pronoun one is typically used, as in (5), where it is used in both singular and plural forms, with translations to show how French is different. The pronoun one appears to supplement the lack, in English adjectives, of the grammatical person that is normally represented by the parameters of number and gender in Latin and French. For a substantivized adjective to have singular reference in Modern English it is normal to add the pronoun one(s): *un grand* is ‘a big one’; *un petit* is ‘a small one’.

- (7) *J'en ai acheté un bon.* ‘I bought a good one.’ *J'en ai acheté un des bons* ‘I bought one of the good ones.’

Adjectives in English had lost all three parameters of number, gender, and case by late Middle English. Substantivized adjectives in Modern English consequently have a very limited

range of expression: they are normally restricted to generic usage, often with plural agreement of the verb, and require a noun or a pronoun to establish unit usage, as in (8).

- (8) **The rich** were unaware that **the poor** were intent on fomenting rebellion.
 The rich man in his castle, **the poor man** at his gate...
 The rich men in their castles, **the poor men** at their gates ...
 Of these two men, **the rich one** expected **the poor one** to be his servant.
 The rich ones expected **the poor ones** to be their servants.
 The rich expected **the poor** to be their servants.
 ***The rich** expected **the poor** to be his servant.

3. ADJECTIVE POSITION IN FRENCH. It is well known that French adjectives may be either preposed or postposed to the noun, and that certain categories of adjective occupy one position rather than the other. Adjectives of colour or nationality are rarely if ever preposed, while some of the most common adjectives are normally preposed'. What is of interest, however, is that there are often contrastive meaning differences created by moving an adjective from one position to the other.

Guillaume, in the *Leçons de linguistique* quite often mentions the two different predications of the adjectives in French; one of his common examples is the contrast between *une vraie femme* 'a true woman' and *une femme vraie* 'a truthful woman', as in the following quote, where he comments:

Une saisie précoce de l'opération de substantivation nous laisse dans le procès ; et si alors l'adjectif intervient, c'est non pas au substantif-résultat qu'il s'applique, comme précédemment, mais la substantivation-procès et la conséquence est un adjectif antéposé au nom et psychiquement, infléchi en direction de l'adverbe – l'adverbe étant une adjectivation de procès (1997:30).⁵

In other words, the adjective may be applied before the completion of the operation of the internal incidence (Guillaume's *substantivation-procès*), and in that case will be predicated of the nominal lexeme, before the completion of internal incidence. *Une vraie femme* simply indicates that the lexeme *femme* is truly appropriate to the person so designated.

When applied after the completion of the process of internal incidence, the adjective applies to the complete noun, (Guillaume's *substantif-résultat*). In this case the import of meaning applies to its nominal support, the element of person: *Une femme vraie* is a truthful person. These two different positions are shown in (9), which is a development of our original figure in (2) above.

- (9) **vraie** **femme**
 (lexeme) | (lexeme)
 ↓
 (person) ← **vraie**

In short, the two different values of the French adjective, preposed and postposed, are entirely dependent upon the functioning of the internal incidence of the noun. (see Hewson 1988;

⁵ 'An early arrest of the operation of substantivation leaves us in the midst of the process; and if at this point the adjective intervenes, it is not to the resultant noun that it applies, as before, but to the process of substantivation itself. The consequence is an adjective preposed to the noun, and operating much like an adverb – the adverb being the equivalent of an adjective-in-process.'

1989; 1991c; 1991d for further details and data). The preposed adjective forms a lexeme-to-lexeme relationship, which is not fundamentally different from adverbial agreements (as Guillaume notes in the quote above), except that there is also a grammatical agreement of gender and number, which an adverb cannot have: an adverb is normally limited to purely lexeme-to-lexeme predication. The lexeme *vraie* in *vraie femme* indicates that the term *femme* is totally appropriate as a designation of the person involved; it is a statement primarily about the lexeme, and only secondarily about the person. It states that *femme* is a totally appropriate lexeme, a lexeme that is exact, true, in its portrayal of the person.

In the syntagma *femme vraie*, on the other hand, the operation of internal incidence is completed (and the NP has become a complete entity) before the adjective comes into play. In this case it is the person designated by the noun that is portrayed as being true, a person who can be expected to speak the truth. The contrastive meaning of adjectives is marked by position in French and in the Romance languages in general. But it is also found in English, where it is sometimes marked in stress patterns, as in (10).

- (10) *l'homme pauvre*='the **poor** man'
le pauvre homme='the poor **man**'
un ami gentil='a **kind** friend'
un gentil ami='a kind **friend**'

The complex morphology and syntax of German adjectives. In the morphology of adjectives and nouns, German has three genders (Masculine, Feminine, and Neuter), singular and plural number, and four cases (Nominative, Accusative, Genitive, Dative). It also has three declensions of adjectives: Strong, Weak, and Mixed (a mixture of Strong and Weak used with indefinite definers), all of which have different syntactic usages.

4. THE PARADIGMS OF THE GERMAN ADJECTIVE. The extensive paradigms of the German adjective gut 'good' are illustrated in (11). Distinctions of gender are not marked in the plural, and in the weak and mixed declension case distinctions are also unmarked in the plural.

(11)

Strong				Weak			
	Masc. S.	Fem. S.	Neut. S. Pl.	Masc. S.	Fem. S.	Neut. S.	Pl.
N.	guter	gute	gutes	gute	gute	gute	guten
A.	guten	gute	gutes	guten	gute	gute	guten
G.	guten	guter	guten	guter	guten	guten	guten
D.	guten	gutter	gutem	guten	guten	guten	guten
Mixed							
	Masc. S.	Fem. S.	Neut. S.	Pl.			
N.	guter	gute	gutes	guten			
A.	guten	gute	gutes	guten			
G.	guten	guten	guten	guten			
D.	guten	guten	guten	guten			

The strong declension is used when the Noun Phrase has no definer, which frequently happens with mass nouns, as in (14): M. *guter käse* 'good cheese'; F. *gute gesundheit* 'good health'; N. *gutes brot* 'good bread'. The mixed declension (which uses strong forms for the singular Nominative and Accusative and weak forms for the rest), is used for indefinite definers, and the weak declension is used with definite definers, as illustrated in (12).

(12)	M.	F.	N.
	<i>guter Käse</i>	<i>gute Gesundheit</i>	<i>gutes Brot</i>
	‘good cheese’	‘good health’	‘good bread’
	<i>ein guter Käse</i>	<i>eine gute Gesundheit</i>	<i>ein gutes Brot</i>
	‘a good cheese’	‘a good health’	‘a good bread’
	<i>der gute Käse</i>	<i>die gute Gesundheit</i>	<i>das gute Brot</i>
	‘the good cheese’	‘the good health’	‘the good bread’

4.1. THE PREDICATE ADJECTIVE. Amid all this paradigmatic complexity there is one striking note of simplicity: the predicate adjective, which is ultimately dependent upon the verb, and only indirectly on the noun, has no grammatical inflection whatever, as in (13).

(13)	<i>Der Käse ist gut</i>	‘The cheese is good’
	<i>Die Gesundheit ist gut</i>	‘The health is good’
	<i>Das Brot ist gut</i>	‘The bread is good’

The finite verb, as a Secondary, when predicated of a noun subject, always finds its support in the person of the substantive, not in its lexeme. If we say ‘The lady looked at her watch’, it is not the lexeme lady that looks at the watch, but the person designated by the lexeme. Consequently the predicate adjective is only connected to the subject through the medium of the verb, and only to the person designated by the subject. In this way the predicate adjective operates as a Tertiary. Whenever *gut* is used as an adverb, as in *schlafen sie gut* ‘sleep well’ it is likewise stripped of its adjectival inflections.

4.2. CONTRASTS WITH WEAK AND STRONG ADJECTIVES. It is unthinkable that all the morphology of the German adjective system is meaningless, and used only for decorative purposes, but that is indeed the way that these paradigms are taught. The students are given a list of determiners which are followed by Weak forms, and another list of determiners that are followed by Mixed forms; the Strong forms are typically used when there is no determiner.

It is, in fact, a well-kept secret, that there are minimal pairs which show contrastive meaning between the Strong and Weak declensions. It is also of note that the meaning contrast between Strong and Weak parallels that of the preposed and postposed adjectives of French: there is something universal operating here that stems from the internal structure of the noun: the interrelationship of lexical meaning and grammatical meaning, the relationship of lexeme to person.

A colleague who was a native speaker of German informed me long years ago that minimal pairs are to be found with the first person plural pronoun *wir*, as in (14)

(14)	Strong	Weak
a.	<i>Wir alte Berliner</i>	<i>Wir alten Berliner</i>
b.	We old Berliners	We elderly Berliners
c.	<i>Nous, les vieux Berlinois</i>	<i>Nous, les Berlinois vieux</i>

The Strong form indicates our status as Berliners: we have been around Berlin for a long time, and our relationship to Berlin is an old one. The Weak form directly designates the persons involved, the Berliners who happen to be elderly, old in their personal age. The distinction is most easily made in English by using different adjectives: old versus elderly.

Another native-speaker colleague, Christa Beaudoin-Lietz, also noted that other adjectives may produce similar pairs; that *wir fleissige studenten* ‘we assiduous students’, with the Strong form, suggests that all students are necessarily hard-working, because the alternative is failure. But *wir fleissigen studenten* with the Weak form, indicates those of us who work hard as opposed to those who do not work so hard: it distinguishes two different groups of persons.

A recent article by Christa Beaudoin-Lietz and John Plews (2008) has in fact pointed out a variety of contrastive data in German adjective usage, and it appears that further research could find much interesting data on the role of Person in the system and functioning of German adjectives.

4 Person in the English adjective. It is surprising that even in the usage and functioning of English adjectives, for all their lack of morphology, there are examples of the interplay of lexeme and person. There are, for examples, adjectives such as *alleged* or *supposed*, which comment on the validity of the lexeme: the *alleged* thief, the *supposed* originator, that can not be used as predicate adjectives, as in (15), because the predicate adjective, through the medium of the verb, can only relate to the person of the subject, and not to its lexeme.

- (15) the alleged thief *the thief was alleged
 the supposed originator *the originator was supposed

In Modern English many items that the dictionary lists as substantives are used functionally as adjectives, but only as epithets; they cannot be used as predicate adjectives, as shown by the examples in (16).

- (16) a. This is the company bus *This bus is company
 b. This is a bus company *This company is bus
 c. This company has many buses *This is a buses company

The examples were chosen to show that with many of these collocations either of the two elements can be the support of the other. The second element, which always retains its status as a substantive, has an internal person, and can be pluralized: *company busses*, *bus companies*, but the first of the two elements, since it is adjectival in function, has no internal person, and consequently can not normally be pluralized, as is shown in (15c), an error that non-native speakers sometimes slip into.

5. CONCLUSION. The grammatical person of the substantive noun. Our survey has covered a large range of data that raises the important question of the reality of linguistic person: what is a linguistic person? Before any answer is attempted, we need to return to the opening paragraph of the introduction and be reminded that language cannot be predicated directly of the world of experience; it is predicated directly of our mental perceptions and operations. A linguistic person is fundamentally a mental space, a percept, a memory, an insight. It can be a mental image of an acquaintance or friend, a real person, in the normal sense of the term.

But it can also be a set of circumstances, or a subject matter, with which the speaker is particularly occupied, exemplified by the subject of the sentence ‘This situation is completely intolerable’. Or it can be a complex situation described at length by the speaker: ‘From where the plane struck the water to where it eventually sank’, subject of the predicate ‘was about 200 yards’. It is, in short, almost any mental entity that occupies a space in the mental storage:

something seen, something heard, something remembered, something thought about, something imagined, something to which a linguistic name or label can be given.

The linguistic person, is, in its origin, thoroughly non-linguistic. It becomes an entity of language by becoming the support of a lexeme (or of an even more extended linguistic description) at which point the lexeme becomes a linguistic label to the linguistic person, a label that is applied to the occupant of a mental space. The formation of the substantive noun is the fundamental interface of language and experience, experience as recorded in the working memory, experience as recalled from the long-term memory, even experience as it surges into our mind from the subconscious in the forms of emotion, or of creative inspiration.

When the teacher writes “very good work” on the last page of a student’s essay, the note written on the page reflects an opinion of the teacher that gradually developed during the reading of the essay. That mental opinion is then expressed verbally through the finding of a suitable lexeme, in this case work, to represent the essay that has been committed to the paper, to which the teacher can add the opinion good, reinforced by the expressive adverb very, the whole process forming a typical example of the three predication stages that, by dint of constant recycling, form the universal basis of syntax in the languages of the world.

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DENOMINAL VERBS DERIVED BY CONVERSION: SEMANTIC AND SYNTACTIC PREDICTABILITY

ANZHALIKA LAMAVAYA
Minsk State Linguistic University

Abstract. Quite a large number of denominal verbs in English manifest the ability of nouns to convert into verbs without any concomitant changes of the base. Despite being a long-disputed issue, the problem of noun-to-verb conversion still gives rise to scientific speculation. One of the recent theses about conversion is the possibility of predicting the lexical meaning of a converted item, a possibility which has been denied previously. In this paper I will attempt to show that it is possible to predict not only the semantic features (i.e., lexical meaning) of a denominal verb derived by conversion, but also syntactic ones (i.e., valency and transitivity).

Keywords: English, conversion, denominal verbs, predictability, typical situation, semantic roles, valency, transitivity.

Languages: English, Russian, Cyrillic characters.

AT THE BEGINNING of my paper I'd like to remind you about two nice fictional characters, Winnie-the-Pooh and Piglet:

Cottleston, Cottleston, Cottleston Pie,
A fly can't **bird**, but a bird can fly. (Milne 1933:86)

At first he [Piglet] thought that there wouldn't be a Heffalump in the Trap, and then he thought that there would, and as he got nearer he was *sure* that there would, because he could hear it **heffalumping** about it like anything. (Milne 1933:80)

The instances in bold face in the above quotations from Milne (1933) demonstrate the phenomenon of so-called conversion, also known as zero-derivation (Marchand 1969, Kastovsky 2005), null affixation (Lopatin 1966), functional shift (Potter 1969, Quirk et al. 1980). I won't discuss here the adequacy of these terms but stick to the term conversion as the traditional one, introduced by Sweet (1940:39) at the end of the XIX century and meaning the change of a word-

class without any alteration of the base. In particular I will deal with the creation of denominal converted verbs in English and the problem of predictability of certain features of such verbs.

1. PREDICTABILITY. The possibility of predicting the lexical meaning of a converted item is a fairly recent speculation, versus previous denial.

NO	YES
“Like other processes of word-formation, total conversion tends to be sporadic and unpredictable” (Adams 1973:27).	“[t]he meaning which naturally follows from the basic properties of the object — or which reflects the not atypical ‘happening’ with such an object — features the highest degree of predictability” (Štekauer 1996:107).

Table 1. Is it possible to predict the meaning of an item, derived by conversion?

Table 1 shows two contradicting opinions on the issue – one presenting conversion as sporadic and the other considering some factors that make the output of the process of conversion predictable. The latter assumption has much in common with the idea of predominant features and conventional roles of parent nouns, presented in the fundamental work on denominal converted verbs by Clark & Clark (1979:791).

One of the most detailed proposals concerning the predictability of semantic features of a denominal converted verb is that of M.V. Nikitin (1996:527-28). “The characteristic roles of things in the situations that are typical of them determine the semantic ways of converting the names of those things into verbs” (translation from the Russian original by AL). This statement becomes the basis of his classification, which includes 4 general semantic patterns of noun-to-verb conversion: functional/instrumental, behavioral/similarity, metamorphic/acquired similarity, and resultant (Nikitin 1996:547–48). But my research shows that the above mentioned analysis of typical roles of things could be of great use in detecting syntactic features of denominal converted verbs, such as transitivity and valency.

2. RESEARCH. My research went as follows. First I picked 620 pairs of nouns and corresponding denominal verbs, derived by conversion, from *Webster’s New World Dictionary & Thesaurus* (Webster’s 1998). My choice was limited by several factors:

1) The nouns should name material things: living beings, physical objects and substances, places with material boundaries – assuming that the roles of such things are more sharply defined than those of abstract notions;

2) The typical role of such a thing should be that of an agent, object, instrument or place – the reason is that agent and object are inherent semantic roles, while instrument is subsidiary (still important, if not inherent); at the same time, place (location) can become an inherent participant with some verbs (Downing & Locke 1995:110–114);

3) The derived verb should possess at least one direct meaning (i.e., connected with the direct, material meaning of the source noun). I believe that figurative meanings of a derived verb could also be predicted, but that would involve additional associations, sometimes even multiple, so I excluded verbs lacking direct meanings to keep my research uniform.

Secondly, I modeled typical situations for the things named by the nouns chosen. The models were based on the definitions taken from Webster (1998).

Noun	Definition	Typical situation	Role
<i>tailor</i>	“a person who makes, repairs, or alters clothes”	<i>A tailor</i> makes, repairs, or alters clothes	Agent
<i>knife</i>	“a cutting or stabbing instrument with a sharp blade”	Somebody cuts something or stabs somebody <i>with a knife</i>	Instrument
<i>water</i>	“the transparent liquid for a specified use, as drinking or washing”	Somebody drinks <i>water</i> or washes something <i>with water</i>	Affected Object or Instrument
<i>bottle</i>	“a container, esp. for liquids, usually made of glass”	Somebody puts or stores liquids <i>in a bottle</i>	Location

Table 2. Modeling a typical situation

Table 2 demonstrates the gist of the modeling: I transformed the definition into a simple sentence with a source noun and identified the role the entity it names.

Before I proceed with my analysis, let me explain why I have chosen dictionary definitions as the basis for modeling typical situations. It is quite obvious that the notion of typicality is extremely culture-dependent. To see this, consider the cases of verb derivation from the same noun in English and in Russian (the translation of the Russian definitions is mine):

Noun	Definition	Derived verb and its meaning
In English <i>a gypsy</i>	“a member of a nomadic [i.e., moving from place to place] Caucasoid people with dark skin and black hair” (Webster’s 1998)	<i>to gypsy</i> (vi) “to wander or live like a Gypsy” (Webster’s 1998)
In Russian [cygan]	“a swarthy, dark-haired person; someone who wanders, a vagabond, someone who moves from place to place; who begs importunately” (Jefremova 2006:804)	[cyganit’] (vi) “to wander, to vagabond, to move from place to place” (vt) “to get something by begging” (Jefremova 2006:804)

Table 3. Verb derivation from the noun *gypsy* in English and in Russian

As is clear from **Table 3**, the definitions of the word *gypsy* in English and in Russian have similar descriptive parts, but their functional parts match only partially: in English the typical role of a gypsy is that of a nomad and in Russian, that of a vagabond and of a beggar, which is reflected in the meaning of the derived verb and affects its transitivity. So, to avoid this kind of interference I relied on data provided by English dictionaries, which reflect associations typical of English-speaking people.

The next step of my analysis was to reveal the syntactic features of denominal converted verbs by transforming the models obtained for typical situations into typical sentences with target verbs. I relied on the assumption by Potter (1969:163) that conversion is a type of syntactic transposition, i.e., a word which undergoes conversion “is forced into an unusual

tagmemic slot,” so I remodeled the sentences with source nouns, shifting the noun to the position of the predicate. This transformation went as follows:

- 1) *A tailor* makes, repairs, or alters clothes Somebody *tailors* clothes
- 2) Somebody cuts something or stabs somebody *with a knife* Somebody *knifes* something or somebody
- 3) Somebody drinks *water* or washes something *with water* Somebody *hydrates* (= *waters*) or *waters something*
- 4) Somebody puts or stores liquids *in a bottle* Somebody *bottles* liquids

So, the complete layout of modeling went as follows: a dictionary definition of a source noun a model of a typical situation for the thing, named by the source noun a typical sentence with a denominal verb, derived by conversion.

Thus, the models of typical situations show the semantic pattern of derivation, while the resulting typical sentences reveal two syntactic characteristics of the derived verb: *transitivity* and *valency* (the type and number of participants that are inherent to the situation, as demonstrated in **Table 4**).

Typical sentence with a converted verb	Transitive (vt) or intransitive (vi)	Valency (type and number of participants)
Somebody <i>tailors</i> clothes	vt	<i>bivalent</i> : agent, affected or resulting object
Somebody <i>knifes</i> something or somebody	vt	<i>bivalent</i> : agent, affected object or patient
Somebody <i>waters</i> or <i>waters something</i>	vi or vt	<i>monovalent</i> (agent) or <i>bivalent</i> (agent, affected object)
Somebody <i>bottles</i> liquids	vt	<i>bivalent</i> : agent, affected object

Table 4. Syntactic characteristics of a denominal verb

The results implied by the modeling applied and summed up in **Table 4** demonstrate the following regularity: if the situation, typical of the entity named by the source noun, presupposes two or more interacting objects, the correlated denominal verb is transitive and bivalent (or trivalent). If a typical situation lacks such interaction, the resultant denominal verb is intransitive and monovalent.

The following step of my research involved the analysis of sentences with denominal converted verbs, taken from 110 works of fiction by British and American authors of the 19th and 20th century. The number of the target verbs was limited to 140 verbs with the highest frequency rate (Hofland & Johansson 1982). The resulting corpus of sentences with denominal converted verbs totaled 6,575.

Next I carried out the comparative analysis of modeled typical sentences and actual sentences, paying special attention to the following factors:

- 1) morphological properties of the predicate: finite or nonfinite form; active, passive, reflexive, or reciprocal voice; subjective or objective verb; types of object: direct, indirect, prepositional; phrasal verb or not;
- 2) valency of the predicate: the type and number of participants;

3) semantic characteristics of the participants: lexico-semantic class, concrete or abstract, animate or inanimate, etc.

The analysis showed a remarkable regularity: once the above mentioned features of the predicate of an actual sentence coincide with the ones of the modeled sentence, the meaning of the actual predicate is closely connected with the meaning of the source noun, usually implying some direct performance or use of the thing named (see **Table 5**).

Modeled sentence	Actual sentence
Somebody <i>tailors</i> clothes	“Henry Leyden knows exactly who tailored his outfit.” (King & Straub 2002:195)
Somebody <i>knifes</i> something or somebody	“Then we will knife the sentries at the gate.” (MacLean 1958:183)
Somebody <i>waters</i> or <i>waters something</i>	“And now — let's go and water the flowers.” (Chesterton 1994:124)
Somebody <i>bottles</i> liquids	“And some of the best talk in those times had been merely talk of life itself – of how it was to bottle your own beer...” (Rice 1991:58)

Table 5. Matching predicate features: modeled sentences vs. actual sentences

As is clear in **Table 5**, when the modeled distribution of a converted verb matches the semantic and syntactic distribution of an actual predicate, the meaning of the latter is direct: *to tailor* means “to make clothes,” *to knife* means to kill with a knife,” *to water* means “to pour or sprinkle water over,” *to bottle* means “to place in a bottle.”

At the same time, deviations or modifications in the syntactic properties of the predicate (as compared with the modeled ones) indicate a change in the meaning of the denominal verb: it becomes more general, figurative or even idiomatic.

Modeled sentence	Actual sentence
Somebody <i>tailors</i> clothes	“We're going to tailor a character for you.” (Sheldon 1981:87)
Somebody <i>knifes</i> something or somebody	“It [the wind] knifed right through his thin Braqui clothing.” (Martin 1979:17)
Somebody <i>waters</i> or <i>waters something</i>	“We will plant self-denial, and hoe it and water it.” (Alcott 1935:36)
Somebody <i>bottles</i> liquids	“They still thought they had him bottled up on the mainland.” (Sheldon 1991:283)

Table 6. Discrepancy of predicate features and change of meaning (direct figurative)

Table 6 presents a set of examples in which the meanings of denominal verbs are figurative. In the sentences with the verbs *to tailor* and *to water*, we see that the affected objects are presented by abstract notions, while the model implies material things. In the sentence with the verb *to knife* the agent is expressed by a natural force (which is inanimate) and the verb itself is intransitive with a location (*through his clothing*) that has become an inherent participant. In the sentence with the verb *to bottle* the affected object is human, while the model implies a liquid.

Such discrepancies make these meanings figurative: *to tailor* means “to make or adapt for a particular purpose,” *to knife* means “to pass through something quickly, like a sharp knife,” *to water* means “to supply as if by water,” *to bottle* means “to keep someone trapped or contained.”

Let’s regard another set of examples in **Table 7**:

Modeled sentence	Actual sentence
Somebody <i>spies on</i> somebody	“At dusk Dirk spied an air car.” (Martin 1979:291)
Somebody <i>blankets</i> a bed or an animal	“The helicopter started down, and immediately they were blanketed in fog.” (Crichton 1993:77)
Somebody <i>brushes</i> teeth	“He towed, brushed his teeth with a finger.” (King 1987:162)
Somebody <i>carpets</i> the floor	“It was a beautiful morning; the fields alongside the road were carpeted with flowers.” (Puzo 1987:370)

Table 7. Discrepancy in predicate features and change of meaning (direct → general)

Table 7 reveals several examples of discrepancies that make the meanings of predicates more general. In the sentence with the verb *to spy*, we see that the traditional prepositional object has changed for the direct object and as a result instead of “to act as a spy” the predicate denotes “to notice.” In the sentences with the verbs *to blanket*, *to brush*, and *to carpet* we observe the additional instruments (fog, a finger, flowers) that neutralize the incorporated instruments and means (i.e., a blanket, a brush, and a carpet). The resultant meanings go as follows: *to blanket* means “to cover,” *to brush* means “to clean,” and *to carpet* means “to cover.”

The sentences in **Table 8** illustrate the conditions or distributions that account for idiomatic meanings:

Modeled sentence	Actual sentence
Somebody <i>brushes</i> clothes, teeth, hair	“As they walked, brushing their way through bush and herb, sweet odours rose about them.” (Tolkien 2007:850)
Somebody <i>combs</i> hair	“In exasperation Arthur had combed his way back through the book.” (Adams 2002:710)
Somebody <i>skates</i>	“I told these fellows they were skating on thin ice.” (Gardner 1934:13)
Somebody <i>paddles</i> a boat	“You know most of the boys have got to paddle their own canoes when they leave us.” (Alcott 1935:147)

Table 8. Discrepancy in predicate features and change of meaning (direct → idiomatic)

In the sentences with the verbs *to brush* and *to comb* (see **Table 8**) the source nouns are inserted into the idiomatic unit “to make one’s way” and preserve the meaning of this unit, specifying only the mode of action: *to brush one’s way* implies “to pass, touching the surrounding objects” and *to comb one’s way* means “to examine thoroughly.” As for the sentences with the verbs *to skate* and *to paddle*, the distribution of the predicates matches the one modeled, but the context makes them idiomatic and figurative: *to skate on thin ice* means “to risk” and *to paddle one’s own canoe* means “be independent and self-sufficient.”

3. CONCLUSION AND APPLICATIONS. We can conclude that the typical situation for an entity named by a source noun makes a kind of frame, which is inserted into the semantic structure of the denominal verb and predetermines typical semantic and syntactic properties of such a verb. This frame also serves as a standard, so any modifications of valency or the typical distribution of a converted predicate result in changes of the meaning of such a verb.

This theory could be applied in teaching English as a foreign language, especially in such aspects as reading and understanding fiction (which abounds in denominal verbs, derived by conversion) – as a single subject or as a part of literary analysis course, and in teaching translation from English into one's native language. The general idea is that students should be instructed to keep in mind a typical situation, associated with a source noun, and types of objects and relations implied by it. Considering this as a template and comparing it with an actual usage will facilitate their understanding of the meaning of denominal verbs in miscellaneous contexts.

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PREFACE

THE THIRTY-EIGHTH ANNUAL MEETING OF THE LINGUISTICS SOCIETY OF CANADA AND THE UNITED STATES WAS HELD AUGUST 9 TO 12, 2011 at The University of Toledo in Toledo, Ohio. The conference theme was “Applying Theories of People Communicating,” referring to new ways of inquiry that have become part of the LACUS universe, where people communicating are at the center of inquiry into the real world, rather than into language as an abstract object. Contributions were especially welcomed that dealt with theories of people communicating within their real-world environments. Of course, in keeping with longstanding LACUS tradition, papers were welcome from any area of linguistics, both abstract and empirical, theoretical and applied. Contributions came from a very broad spectrum of disciplinary backgrounds, encouraging healthy debate and the friendly presentation of often radically differing perspectives on the best way(s) to describe how the human ability to communicate is organized in the brain and in how that ability manifests itself in our real-world social interactions.

The University of Toledo, one of 13 state universities in Ohio, was established in 1872 and became a member of the state university system in 1967. The University of Toledo and the Medical University of Ohio merged July 2006 to form the third-largest public university operating budget in the state. Most LACUS XXXVIII events were held in one of the two original buildings — The Memorial Field House, a state-of-the-art classroom center and home to both the Department of English and the Department of Foreign Languages.

The invited speaker at LACUS XXXVIII was Brian D. Joseph of Ohio State University, whose presentation was titled “Towards a Variationist Interpretation of Data.” Joseph is Distinguished University Professor of Linguistics and Kenneth E. Naylor Professor of South Slavic Linguistics at OSU.

The papers included in this volume have gone through a two-step review process. First, the review of abstracts submitted to the conference; second, the review of submitted manuscripts. Referees for the first step were members of the LACUS Board of Directors and members of the Program Committee. Reviewers for the second step were the members of the Publications Committee. At both stages, continuing the LACUS tradition, reviewers not only recommended acceptance or rejection. Rather, they offered extensive help, where needed, to authors whose abstracts or manuscripts could use improvement. Almost all manuscripts were significantly revised after the conference before being submitted for publication, with authors strongly encouraged to take into account the lively and constructive conversations that are the hallmark of LACUS meetings.

The co-editors would like to offer special thanks to Dan Mailman for laying out this volume. As well, sincere thanks is due to all anonymous peer reviewers who took time out of their busy professional lives to perform the task of assuring the quality of the manuscripts that became the articles you are reading here. Thanks to the staff and supporters of the Toledo Museum of Art for providing a wonderful experience to our conference delegates. Finally, a big thank you to the

student volunteers (Josh Paiz and Kasumi Yamazaki) who did so much to make the LACUS conference at The University of Toledo a success.

-Douglas W. Coleman, September 2011



IMPROVING ORTHOGRAPHICAL ERRORS IN KANJI: INTEGRATING CALLIGRAPHY METHODS INTO THE JFL CLASSROOM

KASUMI YAMAZAKI
The University of Toledo

Abstract. This paper investigates issues in the orthographical errors Japanese as a Foreign Language (JFL) learners face when learning to write kanji. In particular, the study analyzes the learners' kanji error production in terms of proportion and spacing, examining to see whether these errors would be improved after receiving special calligraphic instruction. Fourteen advanced-level JFL learners participated in two sessions: traditional and kōhitsu instruction, and were then assigned to practice kanji with a separate specialized kanji sheet. After completing each task, newly learnt kanji compound words were assessed in the kanji tests.

Four items retrieved from the tests were pair-matched and evaluated based on the examined criterion. The scores of each item were coded into statistical analysis in order to examine the occurrence of the error improvement. Some improvements were observed in proportion and spacing. However, a number of factors may mediate the effectiveness of using specialized kanji practice sheets.

Keywords: Japanese as a foreign language (JFL), kanji, error analysis, calligraphy, kōhitsu

Languages: Japanese, Japanese characters, Chinese characters

IN THE PAST TWO DECADES, there have been increasing numbers of studies published in the field of language learning strategies (Mori 2003:404), among which Japanese as a foreign language (kanji in particular) has gained recent attention. According to Mori et al. (2007:59), “kanji knowledge is a multifaceted notion.” Many researchers recognize that the learning of kanji requires one to obtain different linguistic understandings of kanji, and not only in terms of production or recognition, but also associated speech (on- and kun-reading¹), meaning, and occurrence alone or in combination (see Habein 2000; Matsuda 1998; Morita & Tamaoka 2002; Morton et al. 1992; Van Aacken 1999). Various strategies and methodologies for kanji

¹ On-reading is based on original Chinese reading of kanji characters while kun-reading is native Japanese reading.

acquisition have been examined in attempts to understand the linguistic complexity of learning kanji.

While there is interest by many to learn kanji, the precision which it needs to be written with seems to be of a great challenge for foreign learners of Japanese (Cook et al. 1997). Nevertheless, there is simply not enough time allowed for kanji instruction in the JFL classroom. Therefore, learners are often required to devise their own strategies for learning kanji (Noguchi 1995).

Under the limited time constraints of the standard class period, it is important that both theorists and practitioners identify effective kanji learning strategies and apply them in the classroom in order to help facilitate Japanese as a Foreign Language (JFL) students' recognition, production, and retention of kanji characters. Thus, this paper will first overview the trend in kanji learning strategic research, identifying the common strategies currently used in the JFL classroom. With reference to Asaoka's new approach of integrating calligraphy as a strategy of learning kanji (Asaoka 2009; 2010), the present study will investigate the potential to improve learners' kanji production through the combination of rote learning strategy and kōhitsu instruction (pen/pencil calligraphy) with possible statistical evidence.

1. KANJI LEARNING STRATEGIES IN THE JFL CLASSROOM. Haththotuwa Gamage (2003a) overviews the current trends in kanji learning strategic research, emphasizing that the studies tend to focus on three main categories: 1) the specific relationship between kanji strategies in regards to language learning strategies in general, 2) how learners' background and native language affect the learning of kanji, and finally, 3) analysis of the characteristics of common strategies for teaching and learning kanji.

With reference to the analysis of the common kanji learning strategies, Shimizu & Green (2002) conducted nation-wide studies to investigate teachers' attitudes towards kanji instruction, claiming that the majority of JFL instructors value rote learning method which includes activities such as frequent quizzes, drills, and writing kanji repeatedly. Similarly, Haththotuwa Gamage (2003b) conducted a similar qualitative study to investigate the effectiveness of kanji learning strategies from the JFL students' point of view, pointing out that the rote learning method, such as writing kanji on a piece of paper repeatedly while obtaining the meaning and pronunciation, was the most preferable and effective for JFL learners.

While various strategic studies of JFL learners' kanji acquisition were examined, relatively few of them led to conclusive implications for learning kanji. The rote learning method seems to be the most common strategy currently used in the classroom, yet the studies came short of explaining the function effect of rote learning with statistical evidence. Moreover, there is a concern that the constant rote memorization of kanji may discourage JFL learners, as discussed in Matsumoto (2007).

Two other challenging parts of learning kanji from the students' perspective is retention and the production of kanji errors. Since there are large numbers of kanji to be learnt, preserving kanji in their long term memory is a serious obstacle for JFL learners. Furthermore, some kanji also share similar orthographical structures, pronunciation, and meaning; it is also difficult for the students to produce appropriate kanji from memory and may result in kanji errors. In fact, current studies that include kanji error analysis are very few. Among the recent works of the kanji error analysis (Hatta et al.1998; Chikamatsu 2005), there seems to be a problem in the categorizational scheme; criteria of kanji errors are often influenced by researchers' assumptions.

Although it is not easy to analyze kanji errors entirely, due to the complex features of the kanji system, criteria should be established in order to categorize errors based on observation.

2. THE PRESENT STUDY. Considering all the issues discussed above, the present study investigates the effects, issues, and improvement of JFL learners' kanji production. The objectives of this study are also to analyze JFL students' handwritten kanji by investigating the presence of orthographical kanji errors and examining whether kōhitsu calligraphic materials help JFL students to improve the issues observed in the first text analysis.

2.1. METHODOLOGY. In the first session of the study, there was a total of 14 advanced level JFL students (3 female students and 11 male students). Since the present study deals with students' handwritten kanji production, all the information regarding this research was concealed from the participants. This was done in order to obtain the natural production of the students' handwritten kanji.

The participants had enrolled in at least five semesters of Japanese courses, including the prerequisite to the current course prior to the present study. In the previous session, the participants used the specially designed course pack materials, studying chapters 1 to 7, and then continued through chapters 8 and 9 with translation tasks in the following semester. Each chapter of the course pack contains thematic readings and comprehension questions. During the class, the instructor reviews key vocabulary, mostly the complex kanji compound words, before the reading task is assigned. Each chapter contains an average of 15 to 20 kanji key vocabularies, and learners are all required to take a kanji vocabulary test after the chapter is completed.

This study consisted of two sessions: Traditional input (Chapter 8) and Kōhitsu input (Chapter 9). In each session, participants received different materials to practice their kanji both in-class and as a homework assignment. They then took part in a kanji test for each chapter. The presence of improvement in both sessions was examined by analyzing the number of kanji error cases in the two kanji tests.

In Traditional input, the participants received a handout that provided the exact same list of fourteen kanji vocabulary in Chapter 8 used for the present study with horizontal note-lines next to the vocabulary words they studied. The participants were asked to write down each kanji one time when they received instruction in class. After completing fourteen key kanji vocabulary items, the participants were then given a homework assignment using the same handout and asked to practice those items five more times. All the participants turned in the homework on the day of the Kanji Test A, which was assessed a week after the first experiment (Traditional input).

After the completion of the first session, the participants then took part in the second part of the experiment: Kōhitsu input (Chapter 9). The procedures of the experiment were exactly the same except for the different material to practice kanji. During this input, the participants were provided with the specialized kanji practice handouts filled with grids. Each grid contained a vertical and horizontal dotted line in it to help the students identify where to start and end the kanji strokes. After the input of the sixteen vocabulary items was complete, the participants were provided with the same handouts to practice the newly learned kanji vocabulary words five times as a homework assignment. A week after Kōhitsu input, the participants took part in Kanji Test B. Regardless of the different types of input, the structures of both kanji tests were the same. The main focus of this study is to investigate the effect of the students' handwriting by using two different types of material rather than how well they perform the exam.

2.2. DATA ANALYSIS. Before the kanji tests were collected for data analysis, four items retrieved from two tests were pair-matched, based on kanji orthography and structure, for text analysis. The selection criterion was first to sort out all the vocabulary items by the structure of radicals and components, and then pair them up with the vocabulary items that had the identical or similar structures in Chapters 8 and 9. **Figure 1** indicates the example structures of two kanji vocabulary items from Kanji Test A (Chapter 9) and Kanji Test B (Chapter 9).


Example Structure (Two kanji Compound Word)	Chapter 8	Chapter 9
	神主	私立

Figure 1. Pair-kanji item selection.

The items were evaluated on the basis of the four criteria examined: Inter-Character Proportion (CHP), Inter-Component Proportion (COP), Inter-Character Spacing (CHS), and Inter-Component Spacing (COS). For instance, if a kanji item contains an unequal sized character when compared to the others, it is determined as a CHP error. If the size of the character is even but the kanji component size is not, then this error is categorized as COP. As for the spatial errors, when there is unexpected space between the characters, it is determined as a CHS error. Finally, if there is equal space between the characters but not in-between the component, it is categorized as a COS error (see **Figure 2**).


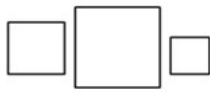



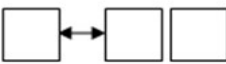


Kanji Error	Level of the Kanji Error	Target Structure of Sample Kanji	Sample Kanji Error
Proportion	Inter-Character Proportion		
	Inter-Component Proportion		
Spacing	Inter-Character Spacing		
	Inter-Component Spacing		

Figure 2. Criteria of the kanji errors.

However, unlike the proportional error cases, spatial errors in kanji compound words sometimes depend on the context. In fact, the quantity of COS should be smaller than the quantity of CHS since the component space is always smaller than the character space. If COS is greater than or equal to the value of CHS, as seen in Sample 2 in **Figure 3**, the radicals and

components would look too separated to constitute as a character. Although the quantity of the COS is equal in both samples, the coder(s) must always look at the value of CHS. As is shown as an example in **Figure 3** below, Sample 2 would be categorized as a CHS error while Sample 1 would be considered errorless.

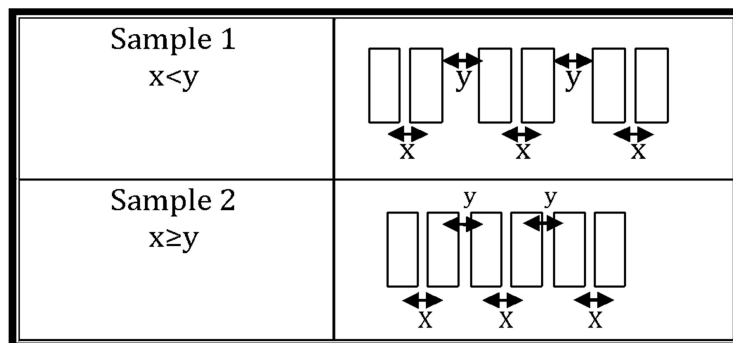


Figure 3. Samples of inter-character (y) and inter-component (x) spacing.

Each item had four criteria to be evaluated in terms of character proportion/spacing and component proportion/spacing; thus a total of 32 variables were coded onto an evaluation sheet by two scorers. The coding took place independently, so that there was no negotiation between the two scorers in making decisions while performing this task. The scorers evaluated all four items holistically by giving 1 point for each aspect of correct writing, 0 points for items containing errors. When there was a disagreement between the two scorers in certain items, it was coded as 0.5 points on that aspect. Overall, the two scorers disagreed on 52 of 448 examples (32 variables in 14 samples), which yields an 88.4 % inter-rater reliability.

3. RESULTS. The scores of each item were coded into SPSS, and paired sample t-tests between four matched items were compared to determine a possible improvement on the scores between the Kanji Test A (Chapter 8) and Kanji Test B (Chapter 9).

3.1. KANJI COMPOUND WORD: ITEM 1. For Item 1, 新婚旅行 (*shinkon ryokō*) in Chapter 8, 修学旅行 (*shūgaku ryokō*) in Chapter 9, were matched and compared for analysis. These two words were matched based on the similarity of the characters' relative complexity and combination. The results from paired samples t-test first indicated that there was no improvement observed in terms of CHP ($p = 0.794$). However, COP showed a significant improvement between the two samples ($\bar{X}_{COP8} = 0.1923$, $\bar{X}_{COP9} = 0.5000$, $n = 13$, $t = -2.551$, $p = 0.025$). Similar results were observed in the comparison of the CHS; significant improvements were observed ($\bar{X}_{CHS8} = 0.3846$, $\bar{X}_{CHS9} = 0.8077$, $n = 13$, $t = -2.513$, $p = 0.027$). As for the COS, errors were significantly improved as well ($\bar{X}_{COS8} = 0.2308$, $\bar{X}_{COS9} = 0.9231$, $n = 13$, $t = -5.196$, $p = 0.000$).

3.2. KANJI COMPOUND WORD: ITEM 2. Item 2 dealt with kanji compound words which included two kanji characters; 花婿 (*hanamuko*) in Chapter 8 and 生徒 (*seito*) in Chapter 9 were used for item comparison. The two compound words share a similar structure; the first character is a

relatively less complex kanji while the second character is a kanji that consists of two components with a similar number of strokes.

Interestingly, the results appeared to be quite different from the case observed in item 1. Again, in item 2, there was no significant improvement in the CHP ($p = 0.795$). On the other hand, the COP seemed to improve significantly ($\bar{X}_{COP8} = 0.0833$, $\bar{X}_{COP9} = 0.6667$, $n = 12$, $t = -4.841$, $p = 0.001$). Nonetheless, in terms of CHS ($p = 0.256$) and COS ($p = 0.555$), no significant improvements were observed.

3.3. KANJI COMPOUND WORD: ITEM 3. For item 3, 神主 (*kannushi*) in Chapter 8 and 私立 (*shiritsu*) in Chapter 9 were chosen for the comparison. The two kanji compound words contain two characters which consist of two components in the first character and a less complex one in the second character.

The t-test showed no significant improvement in the CHP ($p = 0.337$) and COP ($p = 0.673$). However, at the character level, a comparison of the CHS errors showed an improvement in accuracy ($\bar{X}_{CHS8} = 0.6154$, $\bar{X}_{CHS9} = 1.000$, $n = 13$, $t = -2.993$, $p = 0.011$). In another words, all the character spacing samples were evaluated “correct” in kanji test b (Chapter 9). Similarly, the COS were significantly improved ($\bar{X}_{COS8} = 0.4615$, $\bar{X}_{COS9} = 0.8846$, $n = 13$, $t = -3.395$, $p = 0.005$).

3.4. KANJI COMPOUND WORD: ITEM 4. For item 4, 神社 (*jinja*) from Chapter 8 and 制服 (*sēfuku*) from Chapter 9 were selected for the comparison. Each item contains two longitudinal components within a character.

Based on the paired samples t-test, no significant improvements were observed in either the CHP ($p = 0.269$) or the COP ($p = 0.368$). However, the CHS seemed to be significantly improved in Chapter 9 ($\bar{X}_{CHS8} = 0.6250$, $\bar{X}_{CHS9} = 0.9583$, $n = 12$, $t = -2.602$, $p = 0.025$). But once again, in terms of COS, no significant improvements were noted ($p = 0.389$).

In sum, **Table 1** indicates the overall summary of error improvement.

Kanji Error Type	Occurrence of the Improvement (+) Improved / (-) Did not improve			
	Item 1	Item 2	Item 3	Item 4
CHP	–	–	–	–
COP	+	+	–	–
CHS	+	–	+	+
COS	+	–	+	–

Table 1. Summary of the results of error improvement.

None of the errors in the character proportion (CHP) in any of the four items improved significantly, while errors in the component proportion (COP) improved in 50 % of the Items. Character spacing errors (CHS) seemed to improve the most of the categories in this study,

showing improvements in 75 % of the Items. Component spacing errors (COS), like COP errors, also improved reasonably, that is, for 50% of the items. Thus, it may be concluded that the effect of using a specialized kanji sheet was relatively positive, and certain errors have improved in terms of kanji proportion and spacing.

While some improvement was observed, the errors in terms of character proportion did not improve in any of the items. Two possible factors might be considered: first, the participants' focus on the single kanji rather than a compound word; and second, the particular component might have affected the character proportion. Since the participants wrote one kanji in a grid, the attention may be directed to the internal structure of kanji rather than the consistency of the kanji compound word as a whole. The latter factor may be due to the component structure of kanji used in items. A close look at items 1 and 2 reveals that the second character of each Item in kanji test a contained the same radical: 女 'female'. In fact, the 女 in both items is the only radical in the data which can also exist as a whole character. JFL learners may have found it difficult to write this specific radical with correct proportions if they did not have enough experience in stretching this radical to fit into a balanced character.

On the other hand, the spatial errors seemed to be by far the most affected criterion in this study. In 62.5% of the cases, those related to both character and component spatial errors were significantly improved; this can be taken as a possible positive effect for JFL learners' hand-written kanji production. Moreover, on no item did the score significantly worsen. Overall, 7 out of 16 items showed significant improvement, whereas the other 9 items showed no change. Thus, the effect of using the specialized kanji sheet was relatively positive; some of the JFL learners' orthographic kanji errors were improved in certain items.

4. LIMITATIONS. After all, it must be emphasized that some elements might have impacted the outcome in this study. First, the sample size used in the present study was not large enough to assure a completely convincing outcome. A total of 14 JFL learners were recruited for this study; therefore, the occurrence of the error improvement was only measured within these 14 learners' samples.

Another possible impact is that even though the size of the sample coded for error analysis seemed relatively large with a total of 448 examples, it again included only four pair-matched kanji vocabulary items. Regarding the experimental environment, the samples were retrieved from the original course materials. The outcome of error improvement would have been strengthened if the paired items had been identical in all key aspects in both chapters. However, the present study could not find vocabulary items in Chapters 8 and 9 that matched in all desired criteria. Instead, only the number of strokes and similarity of structures could be taken into account for the comparison.

Furthermore, the time span for practicing kanji is also one of debate. In the present study, the research had to take place in accordance with the course schedule; therefore, it was limited to only one week for practicing kanji before the weekly kanji test was given to the participants. The outcome might have been different if the participants were given more time to practice using kōhitsu kanji practice sheet.

There is also possible limitation arising from the evaluation done by the two scorers. While the two scorers had enough training in evaluating collected items independently, 88.4% of inter-rater reliability might be perceived as relatively low agreement. In Chapter 8, 40 % of disagreement was related to proportional errors, while 60 % was in terms of spatial errors,

whereas in Chapter 9, 70% of disagreement was related to proportions, while only 30% of disagreement was on spacing.

Although 11.6% of the evaluation showed disagreement, it seems critical to first identify the level of the disagreement between the two scorers. When the first scorer evaluated an item correct (1) for both character and component proportion or spacing, while the second scorer evaluated both as incorrect (0), then this case is a clear disagreement between two scorers. On the other hand, if the first scorer evaluated correct (1) for the character and incorrect (0) for the component while the second scorer did incorrect (0) for the character and correct (1) for the component, then this disagreement is no longer about the presence of the error but rather an analytical disagreement about the nature of the error. In both of the chapters, 19.2% of the disagreement was of an analytical level.

5. FUTURE RESEARCH. As for future research, a larger sample size over a longer time span should ensure more significant outcomes. It would also be beneficial to include a larger scale of pair-matched kanji vocabulary items with a variety of other kanji components. If the research focus is solely to evaluate one's error improvement based on identical kanji samples, two groups can be recruited for the text comparison. In this case, the control group would receive Traditional Input as well as the note-type kanji practice sheet, while the experimental group would receive Kōhitsu Input and specialized kanji practice sheets.

In addition, further research is necessary to investigate the effect on JFL learners' kanji errors when the sample contains a kanji component which could also constitute the whole character. **Figure 4** shows some examples of the components which constitute a whole kanji as well as other components which do not.

Component Type	Component (Left Radical)	Same Component as a Whole Character
Component which also exists as a character	娘眠、 桜 鮮	女目、 木、 魚
Component which does not exist as a character	河、 体 祈、 技	水人、 示、 手

Figure 4. *Component type.*

Based on the results presented in this study, it could be hypothesized that the error rate might get higher if kanji characters contain radicals which can also constitute a whole kanji. The reason might be that the JFL learners did not have enough exposure to the particular component's proportional differences in both the radical and character. This hypothesis can be examined by comparing kanji characters which contain both types of components.

6. CONCLUSION. Finally, the present study analyzed JFL learners' kanji errors in terms of proportion and spacing, investigating the occurrence of the improvement according to these two criteria. Since the participants had written kanji again and again in different kanji practice sheets, the strategy used in this study can be identified as a variation of the rote learning method. Although the present study does not show any statistical evidence of retaining kanji, the results

do suggest possible evidence of improving learners' orthographical errors of kanji when they used specialized kanji practice sheets combined with the rote learning method. Considering the motivational and orthographical issues JFL learners face when learning kanji, integrating calligraphy into the JFL classroom can be suggested in order to facilitate JFL learners' written production of kanji characters.

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SOME ETHICAL CONSEQUENCES OF THE EVERYDAY CONSTRUCT OF LANGUAGE

DOUGLAS W. COLEMAN
University of Toledo

Abstract: The speech a person hears, in purely physical terms, consists only of sound waves which can be described in terms of variations in intensity across a range of frequencies over time. In similar terms, the marks a person reads have only light reflective properties (such as color) and topology. Yet, rather than focusing directly these physical-domain realities and on people in their real-world surroundings, we become accustomed to thinking about LANGUAGE as if it were a physical entity that people could *use* when speaking, understanding speech, writing, and reading, much as they can *use* a teaspoon or an artist's brush. As this paper demonstrates, the assumption of this everyday construct of LANGUAGE has significant ethical consequences. This paper explores these consequences, specifically with regard to how we think of lies and lying.

Keywords: lies, lying, truth, hard-science linguistics, human linguistics, orthoconcepts, ethics, linguistic metatheory

Languages: English

THEN-PRESIDENT CLINTON WAS DEPOSED on January 17, 1998, in regard to the Paula Jones sexual harassment lawsuit brought against him. He said, "I have never had sexual relations with Monica Lewinsky" (What Clinton Said, 1998). He was found not to have committed perjury, perjury commonly being understood as lying under oath. Even though Lewinsky had performed fellatio on him, most legal experts looking back on the case still seem to agree that he did not commit perjury. Many people are puzzled by how he could have done what he did, said what he said, and not have been lying under oath.

1. LIES AS (INTENTIONALLY) FALSE STATEMENTS. A lie is often defined as an untrue statement, most often with the additional criterion that the speaker / writer knows the statement to be false. Here are some examples:

-) a statement that is not true, (syn.) a falsehood (*Heinle's* 2004:540);¹
-) something you say or write that you know is not true (*Longman* 1997:451);
-) a known untruth expressed as truth (Lie 2010); and
-) a false statement made with intent to deceive (Lie 1989).

There are fundamental problems with all of the above commonsense definitions of a lie. The first definition (*Heinle's*) is problematical because it fails to distinguish between a lie and something that is not true but is believed by the speaker to be true. Suppose Mark says "John was at the meeting last week" believing John to have been there. Also suppose that in fact John was not at the meeting. According to the first definition, Mark has lied. But by the everyday conception of lying, Mark is simply wrong about the facts, not lying.

Surprisingly, perhaps, the second and third definitions are also problematical: "something you say or write that you know is not true" (*Longman* 1997:451) and "a known untruth expressed as truth" (Lie 2010). Suppose we have a scenario like that in (1).

- (1) George: Gracie, we have to leave in fifteen minutes! Are you going to be ready in time?
 Gracie: You know me, George. I'm sure it'll be another day or two before I'm ready.

Since George does indeed know Gracie, he knows that she's kidding. The statement *I'm sure it'll be another day or two before I'm ready* is false, and further, Gracie knows it to be false. According to the second (*Longman* 1997) and third (Lie 2010) definitions, she is lying. However, once again, a reasonable commonsense understanding of the situation is that she is not lying, but just kidding George about his anxiety concerning her being ready on time.

The fourth definition (Lie 1989), which explicitly brings in the speaker's intent, at first seems to be an improvement over the others. When Mark says "John was at the meeting last week," he has no intent to deceive. Thus, according to this last definition, Mark's false statement is not a lie. Similarly, although Gracie's statement *I'm sure it'll be another day or two before I'm ready* is false, she intends George to understand she will in fact be ready in time. Still, the fourth definition has its problems. Suppose we have a scenario like (2) involving husband and wife.

- (2) Nick: Dear, Did Asta just make a mess on the carpet?
 Nora: Yesss, sweetheart, it's *just* terrible.

Now, suppose that their dog Asta did in fact make a mess on the carpet, a terrible mess. Also suppose that Nora says, "Yesss, sweetheart, it's *just* terrible" in such a way as to try to make Nick think that she is being sarcastic. Suppose she wants him to believe that Asta did not make a mess, and in short, that the terrible mess on the carpet is nothing

¹ The definition of "falsehood" in *Heinle's Newbury House Dictionary of American English* (2004:322) is not much help, as it simply refers back to that for "lie": "a lie, untruth". This circularity seems to be a common feature of ordinary dictionary definitions.

at all, let alone terrible. She is attempting to deceive her husband. However, the fourth definition stipulates that the statement must not only be deceptive, but also false (“a false statement made with intent to deceive”; Lie 1989). The statement “Yesss, sweetheart, it’s *just* terrible” is true. So, according to the fourth definition, Nora is not lying, even though she is intending to deceive. Here is where we enter a grey area. While some of us would say that “Yesss, sweetheart, it’s *just* terrible” clearly constitutes a lie when Nora says it, some of us would offer Nora the it’s-not-technically-a-lie loophole as a way out.

President Clinton’s statement “I have never had sexual relations with Monica Lewinsky” involves a similar, but more complex use of the not-technically-a-lie loophole. In (3) we see a segment of the transcript of the deposition he gave in the Paula Jones case (What Clinton Said 1998).²

- (3) Fisher: I think I used the term “sexual affair.” And so the record is completely clear, have you ever had sexual relations with Monica Lewinsky, as that term is defined in Deposition Exhibit 1, as modified by the Court.
- Bennett: I object because I don’t know that he can remember.
- Wright: Well, it’s real short. He can — I will permit the question and you may show the witness definition number one.
- Clinton: I have never had sexual relations with Monica Lewinsky. I’ve never had an affair with her.

The definition given in Deposition Exhibit 1 (President Clinton’s Deposition, 1998) is shown in (4).

- (4) For the purposes of this deposition, a person engages in “sexual relations” when the person knowingly engages in or causes —
1. contact with the genitalia, anus, groin, breast, inner thigh, or buttocks of any person with an intent to arouse or gratify the sexual desire of any person;
 2. contact between any part of the person’s body or an object and the genitals or anus of another person; or
 3. contact between the genitals or anus of the person and any part of another person’s body.
- “Contact” means intentional touching, either directly or through clothing.

Notice that Judge Wright says Clinton is to respond based on the term “sexual relations” as defined in Deposition Exhibit 1, as modified by the Court. The modifications were made by the judge and appear in the transcript. They amount to the elimination of parts (4.2) and (4.3) in the definition. Thus the modified definition amounted to “sexual relations” being with the assumption that “any person” referred to any *other* person, not him-/herself (5).

² Fisher is James A. Fisher, Paula Jones’s Attorney. Bennett is Robert S. Bennett, Clinton’s attorney. Wright is Susan Webber Wright, a federal judge who presided over the Jones case.

- (5) A person engages in “sexual relations” when the person knowingly engages in or causes — contact with the genitalia, anus, groin, breast, inner thigh, or buttocks of any person with an intent to arouse or gratify the sexual desire of any person.

It is known that Monica Lewinsky performed fellatio (“oral sex”) on President Clinton. Since Lewinsky engaged in or caused “contact with the genitalia ... of any person with an intent to arouse or gratify the sexual desire of any person”, she — according to the definition — was having sex with Clinton. As peculiar as it seems, since *he* did not engage in or cause “contact with the genitalia, anus, groin, breast, inner thigh, or buttocks of any person with an intent to arouse or gratify the sexual desire of [a] person”, Clinton was not — at least not according to the definition — at the same time having sex with Lewinsky.

The jury was given a chance to see Deposition Exhibit 1, and of course, had access to it and to the court transcript during their deliberations. So, supposedly, the jury was able to evaluate Clinton’s claim with regard to the specific definition put in force by Judge Wright. But is it realistic to believe that they were able to do this? Surely, if Judge Wright or the Paula Jones’ attorney had been aware that the definition was so poorly crafted as to include a situation in which one person could be having sex with another while that other person is not having sex with them, they would have tried to fix the definition, wouldn’t they? And as legal experts, surely they should have been far more likely to be able to see the dysfunctionality in the definition better than the lay people on the jury. Thus, we are forced to conclude that the members of the jury almost certainly applied their everyday understanding of “sexual relations” to Clinton’s testimony. They must have believed Clinton was saying he had not had sex with Lewinsky in the way we mean when we talk about one person “having sex” with another. It is hard to imagine that Clinton did not expect the jury to understand it that everyday way, rather than according to the very artificial, and clearly dysfunctional definition in Deposition Exhibit 1. Thus, Clinton used a variation of the same not-technically-a-lie loophole.

2. LYING, UNDERSTANDINGS, AND EXPECTATIONS. Sypniewski & Coleman (2012) show that both the speaker’s understanding of a situation and the speaker’s expectation of the hearer’s understanding of it are key to getting at a commonsense interpretation of what it means to lie. This commonsense interpretation treats lying as speaking with the expectation of creating a false understanding in the hearer. Thus the person who is lying is successful when by speaking he causes the understanding of the hearer to fail to correspond with his own understanding. The accuracy of the speaker’s understanding, as Sypniewski & Coleman (2012) show, does not matter.

For details of a formal treatment, see Sypniewski & Coleman (in press), who present a formal description in terms of orthoconcepts (Yngve 2006, Coleman & Sypniewski in press). In brief, consider this example. Betty asks Abe about a payment he owes her. He has prepared a check but purposely has left it on his desk unmailed, fearing his account will be overdrawn. Betty asks, “Have you sent me that check you owe me?” Abe responds, “The check is in the mail.” Abe understands the check to be on his desk. As a result of speaking to Betty, he now expects her to understand that the check is in the mail: he expects her understanding of the state of the check not to correspond to his own

understanding. In a commonsense interpretation of what it is to lie, Abe is lying. Even if his unsuspecting secretary has found the now back-dated check lying on his desk and mailed it for him, he is still, according to this typical commonsense interpretation, lying.

3. THE DIFFERENCE BETWEEN LYING AND DECEPTION IN COMMONSENSE INTERPRETATION. A commonsense interpretation of lying involves someone speaking in such a way such that he can expect it to cause the hearer's understanding of the state of affairs in the world to differ from our own understanding of it. Thus, lying is seen, broadly, as an attempt to deceive through speaking. Even if the liar is found out, and the lie fails, he still lied. On the other hand, we do not say someone was deceived unless the deception succeeds. Further, a deception might be through any means — a lie, a gesture, or through any act, for that matter.

4. PEELING AWAY LYING FROM DECEPTION THROUGH THE CONSTRUCT OF LANGUAGE. When we make the assumption that the sound of speech carries meaning, we create the basis for deceiving while leaving open the not-technically-a-lie loophole. It works this way. Suppose we assume that the phrase “sexual relations” carries the same meaning as the language in (5). When Clinton said “I have never had sexual relations with Monica Lewinsky,” he would have meant, therefore, “I have never knowingly engaged in or caused contact with Monica Lewinsky's genitalia, anus, groin, breast, inner thigh, or buttocks with an intent to arouse or gratify the sexual desire of any person.” If the only sexual activity they had engaged in was her performing oral sex on him, then he would, according to this assumption, be speaking truthfully. However, we know (as Clinton must have) that listeners would acquire a false understanding from what he said: they would infer that Lewinsky could not have performed oral sex on him. He did, in fact, successfully deceive listeners if they believed no such event could have occurred, since we now know that it did. If we accept the assumption that meaning is carried by language, rather than in people and the situations in which they communicate, then we have peeled lying away from deception. We have made it possible to speak with the expectation of deceiving yet somehow not be lying. We have also made it possible to be lying when the speaker has no expectation of deceiving. Examples below will show that these two claims are not speculative, but are based on the results of a survey of how people interpret what is and what is not a lie.

		Age			Total by Sex
		<20	20–25	>25	
Sex	Male	0	19	2	21
	Female	10	26	1	37
Total by Age		10	45	3	58

Table 1. Survey Participants.

5. THE TWO CULTURES OF LYING. It may not be surprising that people do not agree on what constitutes lying. Some seem more inclined to base a judgment of whether another person is lying on whether the person is speaking with an expectation of deceiving, while others seem more inclined to base their judgment on what they assume is the propositional truth of the statement the person says. A survey of 58 university undergraduates contained several items intended to reveal what the respondents viewed as a lie and when they were willing to grant the not-technically-a-lie loophole.

Three items were used as baselines to establish that the respondents could tell the difference between a lie, a mistake, and an approximation. One item contained what the researcher predicted would be judged as a mistake. See (6).

- (6) Aaron and Betty are having a phone conversation. Betty says, “When’s our appointment?” Aaron looks down at his appointment book, scans down the page labeled “Tuesday” to the row labeled “10:30 AM” and sees “Betty” penciled in. However, his computer mouse is covering part of the top of the page, so what he really can read is “T sday.” Aaron answers, “It’s at 10:30 AM on Thursday.” Betty says, “10:30 Thursday? OK. See you then. Bye.”

On this test item, as on all the others, respondents were asked to judge whether the speech of someone in the narrative — in the case of (6), Aaron — was (a) clearly a lie [L]; (b) a mistake [M]; (c) technically a lie, but not really deceptive [TL]; (d) technically not a lie, but an attempt to deceive [D]; (e) a “white lie” (a harmless lie) [W]; or (f) not a mistake and not a lie in any sense [N]. Almost every respondent agreed Aaron simply made a mistake; see **Figure 1.a**.

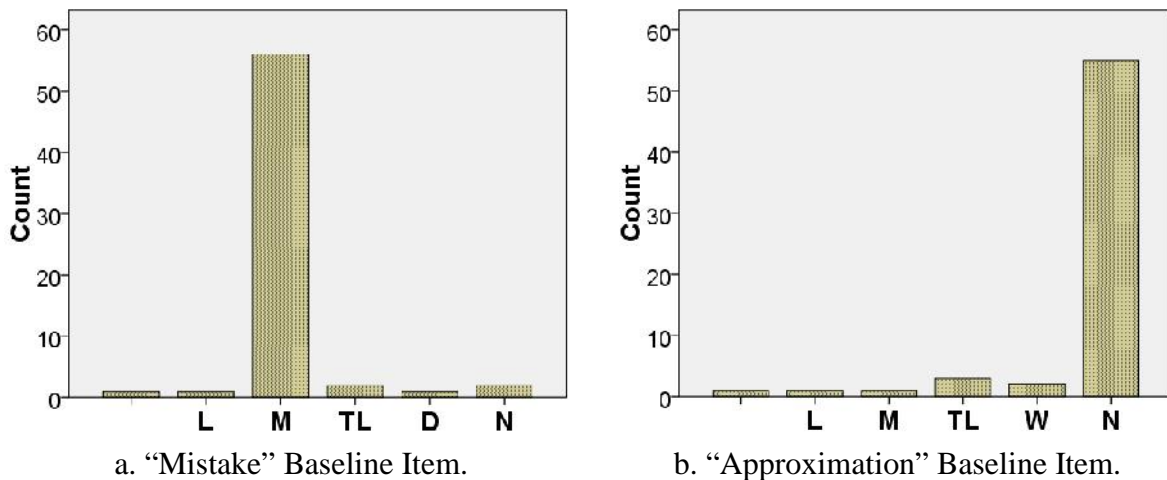


Figure 1. Two Survey Baseline Items.

The item used to establish a baseline for participants’ ability to identify an approximation is shown in (7). Again, in **Figure 1.b** we can see that almost every participant agreed that the speaker (Larry) was not lying, but merely giving an

approximation (“not a mistake and not a lie in any sense [N]”). Note the very low proportion of “noise” (statistical error) in the other categories of response.

- (7) In middle school, Larry is taking a class in physics that covers basic astronomy. His younger sister Mary has heard him talk about the class and one day asks him, “How far away is the sun?” Larry knows that the distance to the sun varies, but averages about 93 million miles, so he answers, “Around 93 million miles.”
- (8) Instead of eating lunch, Ian has one last lunchtime fling with his ex girlfriend Karla before his wedding to Jane. Later, he meets his fiancée Jane downtown. She recognizes the scent of Karla’s perfume and sees lipstick on Ian’s shirt collar. She notices his jacket is badly wrinkled. She says, “I thought you had a business lunch today. Did I see you at lunchtime coming out of Karla’s apartment building?” Ian smiles and quickly says, “Nah, I had lunch with the guys.”

The item in (8) tests participants’ ability to detect a simple and direct lie. They have been told that Ian has not eaten lunch but instead was at the apartment of Karla, his ex-girl-friend, and he explicitly denies having been there at that time. Here, the agreement among participants that Ian has lied is almost 100%; see **Figure 2.a**.

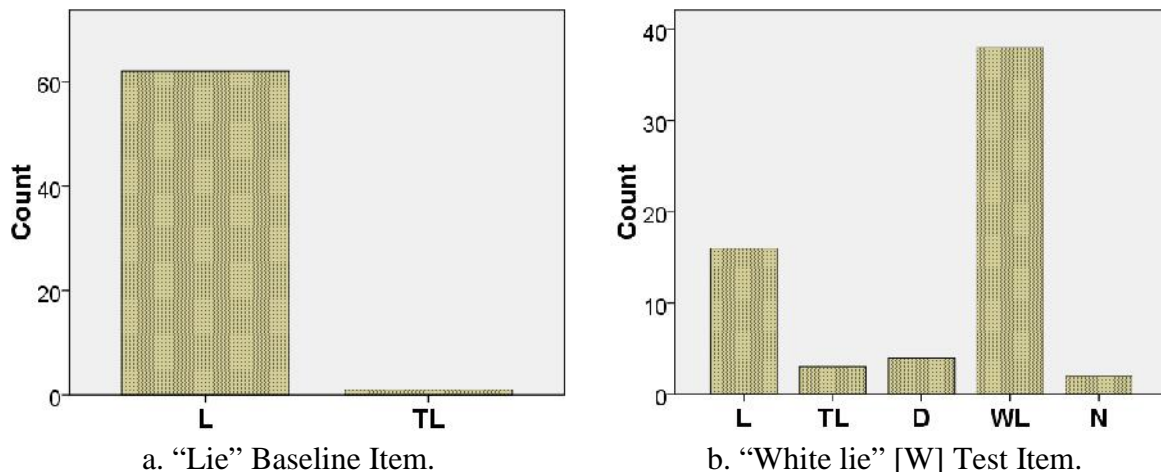


Figure 2. A “Lie” vs. a “White Lie”.

- (9) Carl and Diane are on a first date. They just finished eating at an expensive sushi restaurant. Diane asks, “How did you like it?” To Carl, the food seemed unappetizing, but he doesn’t want to disappoint Diane, who said she loves the restaurant. Carl smiles and says, “It was great.”

There was an item designed to see if participants could agree on the relative harmlessness of a lie, that is, whether or not it is a so-called white lie. See the short narrative in (9). The responses are summarized in **Figure 2.b**. While most did find Carl’s

speech to involve a “white lie,” a significant proportion (a little more than a quarter of the participants) thought Carl clearly lied, as opposed to having told a “white lie.”

Another item was designed to identify a participants’ basis for deciding whether something is a lie or not. That is, is the decision based on speaking with the expectation of deceiving, or is it based on propositional truth? The narrative used for this is (10). The results are shown in **Figure 3.a**. Fewer than half of the participants label Eddie’s speech as a lie — [L] and [TL];³ of these, most see the lie as successful — [L]. The others, nearly two thirds of all respondents, label Eddie’s speech as an attempt to deceive, but absolve Eddie of the offense of lying [D].

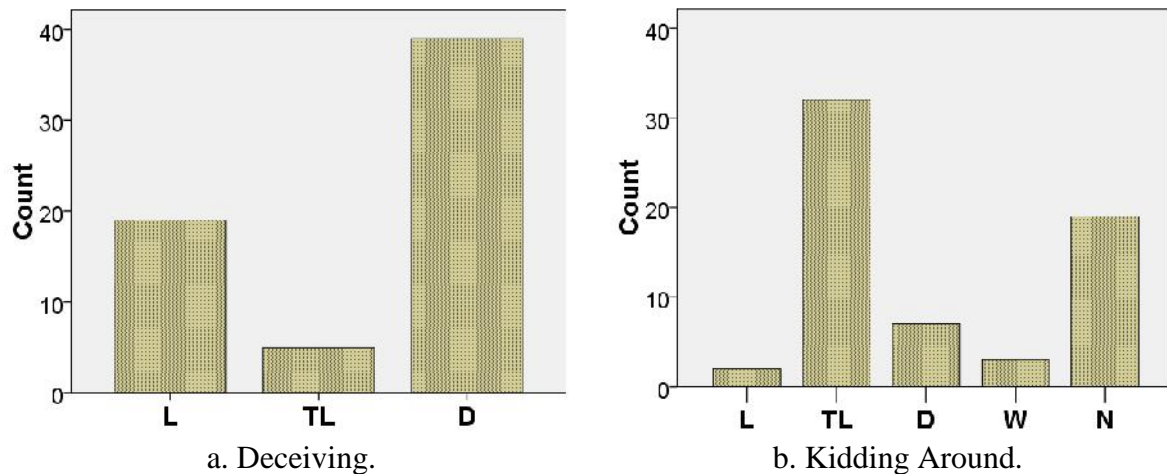


Figure 3. *Deceiving and Kidding Around.*

The survey was administered in three separate sections of an undergraduate introductory linguistics course. After the survey responses were turned in, the participants talked about each item. The item in (10) with Eddie breaking the pot engendered some heated discussion as to whether Eddie had lied. Some respondents were adamant that he had, while others tried to explain that since he hadn’t *really* lied, he was not as guilty as if he had. For the first group of participants, any deception through speech is a lie. However, for the second group, deceiving by speaking cleverly seems to be a lesser offense than deceiving with a simple and direct lie.

- (10) Five-year-old Eddie is running through the living room and bumps a table so that it rocks, knocking over a potted plant sitting on the table. The potted plant rolls off and hits the floor, breaking, sending dirt, broken pottery, and bits of the plant scattering. He turns and notices the mess, but runs out of the room. Later, his mother Fran shows Eddie the mess and asks him, “Did you break the pot?” Eddie says, “I never touched that pot.”
- (11) Gaby and Harry are expecting guests for dinner. Gaby has gone to a lot of trouble to make an intricate flower arrangement for the dinner table. As Harry enters the room, he sees it, smiles, and under his breath (so Gaby

³ [L] = “clearly a lie”, while [TL] = “technically a lie but not deceptive” (a lie that fails to deceive).

can't hear it) whispers "wow." She turns toward him, looks nervous, and says, "Harry, do you think it's OK?" Harry looks at it, looks at her, smiles broadly, and shaking his head says, "Babe, it looks just terrible." Gaby hears what he says, smiles, and looks satisfied.

There was also an item used to see if there were participants who would identify something as a lie if the speaker clearly had no intent to deceive and if the hearer was not in any way misled; see (11). The item was written to make it easy to draw a few key inferences: (i) Harry is positively impressed with the flower arrangement Gaby has prepared; (ii) Harry knows Gaby well enough to know he can say "it looks just terrible" with a smile and she will know that he is positively impressed; and (iii) Gaby (seeing Harry's expression) understands that Harry is positively impressed with the flower arrangement. Hence, we also know Harry has no intention of deceiving Gaby about his opinion of the flower arrangement, and that Gaby is in no way misled about his opinion.

This item also reveals a distinct division among respondents. More than half categorized Harry's speech as technically a lie, although free of deception [TL]. Nearly a sixth of the respondents attribute some kind of deception to Harry's speech either directly [D] or indirectly [L], [W]. Only about a third equated Harry's kidding with something free of deception or error [N]. See **Figure 3.b**.

The language-based interpretation of what constitutes a lie assumes the existence of an utterance that has (or lacks) propositional truth. Central to a commonsense interpretation of what constitutes a lie instead are the understanding of the speaker of the state of affairs in the world and his expectation of the understanding he will create in the hearer by what he says. When these two interpretations of what constitutes a lie are in agreement, there is essentially no variation in participant responses (see **Figures 1.a, 1.b, and 2.a**). However, when the two interpretations conflict, we see two primary groups in the response pattern, in effect, two cultures of lying. One associates lying with speech intended to deceive, the other, with a more legalistic notion of lying. It is interesting to note that we see more overall variation in the pattern of response (compare **2.b, 3.a, and 3.b** with the earlier bar charts).

6. CONCLUDING REMARKS. Herein is the core of the problem. One everyday way of interpreting what it is to lie centers on people, what people understand, and what people expect others to understand. Definitions based on the assumption of language are quite different. They separate lying from deceiving by focusing on the truth and falsehood of statements, an idea that depends on the false assumption that statements carry meaning of their own apart from the expectations of speakers and the understandings of hearers. What we see is that we have developed an everyday understanding of lying (as codified in dictionary definitions) that separates "lying" from deception. This everyday understanding that (a) someone can deceive while "not technically lying" or (b) "lie" yet in no way expect to deceive anyone is a result of the grammatical tradition that assumes words and sentences are real and carry meaning apart from people. Thus we can see that as an explanation for people communicating the ancient and apparently useful construct of language can in fact have some significant ethical consequences in our everyday lives.

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USAGE PRESCRIPTIONS AND AMBIGUITY: HOW PRESCRIPTIVISTS HAVE SOMETIMES PROMOTED LANGUAGE CONFUSION

DALLIN D. OAKS
Brigham Young University

Abstract: It is commonly assumed that usage prescriptions promote greater clarity. This paper, however, considers at least four ways in which prescriptivists have sometimes been responsible for creating, or at least perpetuating, confusion in the language. These include the following: 1) Promoting adherence to usage prescriptions, which, if thoughtlessly followed, could lead to unintended ambiguities; 2) Creating a false impression about the degree to which a prescribed usage will be understood unambiguously by others; 3) Interfering with language changes that if left on their own might otherwise develop clarifying distinctions; and 4) Fostering a view of language in which usage decisions about correctness ignore larger contextual considerations.

Keywords: usage, prescriptivism, ambiguity

Languages: (none)

ONE OF THE ALLEGED BENEFITS of prescriptive usage rules is clarity of expression. We are told to follow particular norms in order to avoid ambiguity or confusion. But a careful consideration of some of the prescribed rules reveals that this claim is sometimes overstated. David Crystal (2006:125), in fact, refers to such a claim as “the big con”. In a similar way, Anne Curzan labels as a “myth” the view that “prescriptive grammar always makes sense.” She explains that “some prescriptive conventions can usefully clarify ambiguity, but some are relics” (Curzan 2009:875). Of course, an awareness of some of the usage prescriptions can be useful for various reasons, but not always or necessarily for helping a speaker or writer to achieve greater clarity. Indeed, some language prescriptions, if followed, could actually contribute to greater language confusion. In saying this, I do not mean to suggest that most usage prescriptions lead to ambiguity. That is certainly not the case. Many have served to clarify meaning. But in at least some cases, the contribution of prescriptivists has served to create more confusion rather than clarification, whether that confusion has occurred in actual ambiguous utterances or instead in erroneous notions about language. And such cases are enough to remind us that guidance on usage matters should not always be left exclusively to prescriptivists, but should also integrate the valuable perspectives that linguists could provide. We shall now look at some ways in which

prescriptivists have sometimes created or perpetuated language confusion. In the discussion that follows, my focus will be primarily on American English.

1. PROMOTING ADHERENCE TO POTENTIALLY AMBIGUOUS PRACTICES. We begin by looking at how some prescriptivists have promoted certain unintended ambiguities by encouraging adherence to particular usage prescriptions. Perhaps the most notorious case of this is with the split infinitive. The split infinitive, of course, occurs when the two parts of an infinitive, such as *to sing*, are separated from each other by intervening language, often an adverb. We can see a split infinitive in a construction like “to carefully sing.” For many years some prescriptivists warned against the use of split infinitives, apparently because of the prescriptivists’ familiarity with and admiration of Latin, which doesn’t split infinitives. Using the linguistic behavior of Latin as a rationale for not splitting infinitives in English, however, is misguided. As Crystal (2006:125–26) points out, the reason Latin doesn’t split infinitives is because in Latin, unlike in English, they are just one word. Despite prescriptivists’ efforts to eliminate the split infinitive in English, it is still commonly found, and Crystal may have identified an important reason for this. He explains that the split infinitive often maintains the iambic stress pattern that English speakers seem to prefer (2006:126). The iambic pattern, of course, alternates unstressed with stressed syllables. We may consider the famous example from the *Star Trek* television series that is often recalled in discussions about the split infinitive. As many will remember, the original *Star Trek* series had an introduction whose opening lines included “to **boldly go** where **no** one has **gone before**.” This set of words generally follows an iambic pentameter stress pattern. But many television viewers, trained by teachers who promoted some of the traditional usage rules of that day, were upset at the presence of the split infinitive “to boldly go.” Note how awkward the stress pattern becomes, however, when we avoid splitting the infinitive: “To go boldly where no one has gone before” (cf. Brockenbrough 2008:224).

But more significantly, in relation to our consideration of ambiguities resulting from prescribed forms, we note that by always revising our sentences to avoid split infinitives, we can sometimes end up with a squinting modifier (cf. Bryant 1971:89). A squinting modifier is one that applies ambiguously to both a preceding and a subsequent constituent. We can see the word *frequently* as a squinting modifier in a sentence like “The members who attend the club frequently commend it” (Taha 1983:260). As this example shows, some squinting modifiers are not the result of avoiding split infinitives. But the avoidance of split infinitives is a common contributor to many squinting modifiers. Bryant shows how the unambiguous sentence “I desire to actually learn to read Arabic,” which has a split infinitive, becomes ambiguous when we revise it to remove the split infinitive, rendering either “I desire actually to learn to read Arabic” or “I desire to learn actually to read Arabic” (Bryant 1971:89). I might also add a split infinitive example of my own: “He agreed *to completely ignore* malicious insults from his opponents.” With this example we should note that if we try to revise the sentence to remove the split infinitive by changing the location of the adverb *completely*, we end up with other more serious problems. Whether we move the word *completely* to occur right after *agreed*, *ignore*, *insults*, or *opponents*, we either change the meaning, get an ambiguity, or create a stylistically awkward sentence. When we consider that the motivation for the usage rule against splitting infinitives appears to be an attempt to apply a rule from Latin, an Italic language, to English, a Germanic one, and not for any actual benefit in clarity, indeed that it can interfere with clarity or style, then there is little reason to maintain this usage rule. In fact, some years ago, Oxford University Press announced that they would be ignoring this prescriptive rule in the future.

Another example of how a blanket prescription has fostered ambiguity is evident in the case of the double genitive. *Webster's Dictionary of English Usage* (hereafter *Webster*) shows that the double genitive has been condemned by some prescriptivists in the past (*Webster* 1989:364). This condemnation is unfortunate since its use could actually serve to clarify meaning in the language. The double genitive commonly occurs when a post-modifying prepositional *of*-phrase (a genitive phrase) has a noun or pronoun object also marked for the genitive, as we can see with a structure like *a friend of Tom's*. Apparently the main reason for the prescriptivists' reaction against the double genitive comes from the fact that a genitive relation can be expressed with just one of the genitive forms (*Webster* 1989:364). Thus instead of saying *a friend of Tom's*, we could just say *Tom's friend* or *a friend of Tom*. But the prescription against the double genitive ignores the fact that in some environments, a double genitive can resolve ambiguity. For example, as *Webster* (1989:364) shows, when we say *Jane's picture*, we cannot be sure whether the structure refers to a picture that features Jane or alternatively to a picture that Jane owns or possesses. In contrast to that structure, when we say *a picture of Jane*, the meaning is clarified to indicate a picture that features Jane, and when we use the double genitive and say *a picture of Jane's*, we indicate the possession/ownership meaning (1989:364). Thus we can clarify both meanings by using the two contrasting forms, *a picture of Jane* vs *a picture of Jane's*. Given this potential within the language, one might think that the prescriptivists, who so frequently justify their prescriptions on the basis of clarity, would have welcomed the double genitive. But some of them apparently have not.

2. CREATING FALSE EXPECTATIONS ABOUT THE CLARITY OF PRESCRIBED FORMS. Another way in which prescriptivists have served to perpetuate confusion is by creating a false impression about the degree to which a prescribed usage will be understood unambiguously by others. It has sometimes happened that prescriptivists have noted a binary in the language, wherein two forms could be applied to two separate meanings. In such situations it might make a lot of sense to designate one form for each meaning and then encourage others to make a careful distinction. But when such distinctions are inaccurately represented as if they corresponded with established and consistent behavior displayed by standard speakers of the language, then confusion may result. Consider, for example, the purported distinction between *disinterested* and *uninterested*. Strunk & White (2005:70) present the distinction as if it were a well-established one. Their very brief treatment of it explains that *disinterested* "means 'impartial.' Do not confuse it with *uninterested*, which means 'not interested in.'"

- (1) Let a disinterested person judge our dispute. (an impartial person)
- (2) This man is obviously uninterested in our dispute. (couldn't care less)

The problem with this treatment of *disinterested* and *uninterested* is that it ignores the divided usage that exists with the forms. In contrast, *Webster* (1989:350–52) provides a clearer picture of the current status of the forms. Even as *Webster* explains that *disinterested* is used more often to indicate impartiality than not caring about something, at least in published writing, *Webster* shows that both meanings are commonly used for *disinterested*. Strunk and White's presentation could provide an erroneous impression as they cast the discussion in terms of what each word means, as if the authors were merely clarifying well-established meanings in much the same way that we might explain to a foreigner what the difference in meanings is between

rooster and *hen*. And even if the distinction were largely maintained between *disinterested* and *uninterested*, our use and interpretation of them should still merit some caution. The meaning of a green traffic light is universally understood and uncontroversial, but we are wise to continue to exercise caution when approaching an intersection with a green light because there are those who, either because they are tired or not paying attention, will sometimes violate the standard traffic lights. As I explain elsewhere, “Even when prescriptivists have identified that two separate grammatical or lexical forms exist for distinguishing competing meanings, we can’t always be sure that the speaker or writer is familiar with or intends to conform to such prescriptive conventions. Thus when we encounter one of those choices, we still must often consider whether the other sense was intended” (Oaks 2010:335).

Continuing with the matter of how prescriptivists have created a false impression about the degree to which a form is understood unambiguously, we shall consider another dimension that relates not so much to actual confusion in a specific communicative setting, but rather to how an explanation by prescriptivists can misrepresent and confuse our entire understanding of the relative status of a form. In particular we shall examine the case of *shall* and *will*. Strunk & White explain the following:

In formal writing, the future tense requires *shall* for the first person, *will* for the second and third. The formula to express the speaker’s belief regarding a future action or state is *I shall*; *I will* expresses determination or consent. A swimmer in distress cries, “I shall drown; no one will save me!” A suicide puts it the other way: “I will drown; no one shall save me!” In relaxed speech, however, the words *shall* and *will* are seldom used precisely; our ear guides us or fails to guide us, as the case may be, and we are quite likely to drown when we want to survive and survive when we want to drown. (2005:86)

Even acknowledging here that Strunk and White are probably engaged in a bit of humorous hyperbole, I think that they perpetuate a confusion here, but not so much one that would actually pose a problem in the type of situation that is described (it would be far-fetched to think that anyone watching a drowning man would be perplexed by the usage of *shall* vs *will* in such a dire emergency), but rather in the thinking of people about how to regard the real status of such a distinction in the language. It seems to me that rather than imply that the distinction between *shall* and *will* is a well understood one that is carefully maintained except in relaxed speech, it would be more accurate to acknowledge that in American English declaratives, the distinction is rarely maintained (Webster 1989:843), except perhaps in some formal writing.

3. INTERFERING WITH THE NATURAL DEVELOPMENT OF CLARIFYING DISTINCTIONS. Now we shall consider a third way that prescriptivists have sometimes created confusion. Here we’ll look at how they have interfered with language changes that if left on their own might otherwise have developed clarifying distinctions. We can see this, for example, with the development and disappearance of “you was” (cf. Webster 1989:972 for a discussion of the development and loss of this form). A few centuries ago, the pronoun *you* was one of several forms for the second person plural. It was part of a paradigm that also included *ye* and *your* and was distinct from the forms like *thee*, *thou*, *thy*, and *thine*, which were used for the second person singular pronoun. Eventually, we began to use *ye*, *you*, and *your* not only as plurals but also as polite forms for the second person singular. Along the way, the pronoun *you*, which had been limited to object uses, also developed subject uses, and *ye* dropped out of the language. Thus the pronoun *you* now

serves as the singular and plural second person pronoun in subject as well as object uses. Because of its earlier identity as a plural pronoun, when the pronoun *you* is used with a BE verb, the BE verb normally takes *are* in the present tense and *were* in the past tense, even when the pronoun *you* is being used as a singular. But it is understandable that some speakers would have begun to use *was* in the past tense to help distinguish between singular and plural uses. Webster (1989:972) reports Barbara M. H. Strang's observation that in the 17th and 18th centuries the use of *was* with the singular use of the pronoun *you* was common. Webster (1989:972) also provides examples of this from Joseph Addison and Alexander Pope. But the grammarian Robert Lowth condemned that usage and "... by the 19th century, *you was* had been relegated to the speech of the uneducated, where it is still to be found." This is a case of a form that could have served a very useful function. There are occasional situations in which it would be helpful to have a verb conjugation that clearly signals whether we are speaking to one or many. Still, the language can of course carry on without the distinction since the BE verb is the only one of our verbs to make a number distinction in the past tense anyway.

Now let's look at another example in which prescriptivists have perhaps stood in the way of a developing practice in the language that could sometimes prevent ambiguity. One common prescription is to use a possessive form (rather than a non-possessive form) in front of a gerund phrase (thus saying, "She knew about John's [or *his*] coming to the dance" rather than "She knew about John [or *him*] coming to the dance."). The prescribed use of a possessive over an alternative form before a gerund phrase has applied whether the gerund phrase itself occurs in a subject position ("Sally's/Sally swimming was a surprise") or an object position ("We approve Sally's/Sally swimming"). In the discussion that follows we shall focus our attention primarily on the prescription as it relates to the use of possessives before gerund phrases in the object position of a sentence. We can see the prescription to use possessives maintained, for example, by Strumpf & Douglas (2004:152). But in its discussion of the prescription, Webster (1989:753–55) shows that historically usage has actually been much divided. With regard to a noun right before the gerund, Pooley (1974:111) says, "A noun immediately preceding a gerund may take the possessive or the objective case. Both have adequate literary authority, with a tendency toward the objective case [*sic*] appearing in recent writers."

If Pooley is correct about the tendency among more recent writers for the object case with nouns, then we have a situation in which their direction of change will run into a prescriptivism that would resist such a development. Yet the prescription against the object case in this environment could sometimes foster ambiguous utterances (cf. Oaks 2010:189). Let's consider two sentences, *I dislike John singing* and *I dislike John's singing*. By following the prescription to use a possessive in front of the gerund phrase, rendering *I dislike John's singing*, there can be confusion about whether the speaker dislikes how John is singing (the manner of his singing) or instead the fact that John is singing. This is a case in which an object form in front of the gerund could serve to distinguish the meaning related to the manner of singing from the simple act of singing, the former meaning being precluded by the object form in front of the gerund. The kind of ambiguity described here is not limited just to gerunds derived from *sing* but also occurs with other intransitive verbs such as *dance*, *speak*, *teach*, etc. In the case of *teach*, an additional meaning related to the content of what is taught may also be precluded by the use of the object rather than the possessive form.

4. FOSTERING A NOTION OF CORRECTNESS DEVOID OF CONTEXTUAL CONSIDERATIONS. We shall now consider one more contribution to language confusion that prescriptivists have helped

foster. This confusion is not so much in the resulting effect of individual sentences or forms whose meanings may be interpreted in more than one way. Rather it comes in the way that many prescriptivists have promoted a view of language correctness as a standard of forms that must be adhered to, regardless of the setting or larger context. By failing to acknowledge the fact that the appropriate use of language can often vary from one situation to another, they have instilled a false sense of language competence in those who learn language rules and apply them rigidly. Of the various ways that prescriptivists have fostered confusion in the language, this way is probably the most significant. Note the following question/answer sequence based on an exchange that occurred on a grammar hotline:

Q. A choir member called about her church's slogan: *The Church is We*. She said, "This sounds ridiculous. I know there's a grammar problem in there somewhere."

A. The slogan is perfectly correct. **We** is a subject complement, correctly in the nominative case form. It renames the subject, so it must share the properties of the subject. Bravo or brava to the grammarian who composed that slogan. (Strumpf & Douglas 2004:166)

This example is a good illustration of a lost opportunity to help the caller with the question to understand how the requirements of a formal prescriptive rule must be balanced with appropriateness, as determined by contextual and situational considerations. The caller felt that something was wrong about the slogan. But the grammarian doesn't even address why the caller might have had that intuition about the slogan. Instead, a prescriptive rule is articulated, and the issue is summarily dismissed. Despite the prescriptivist justification for the form, I agree with the caller that something is wrong with the saying, *The Church is We*. The problem with the expression, however, has more to do with its violation of appropriateness rather than any kind of violation of prescriptive rules. Except in the most formal of settings, the grammar of the slogan, "The Church is We," would be an egregious violation of customary language use. Indeed, almost no native speaker of the language would ever speak or write that way. And although creative departures from customary language use can sometimes be an effective way to call attention to what someone is saying, the slogan that concerned the caller does little more in my opinion than call attention to its own awkwardness.

When applied in its extreme, grammatical prescriptivism ignores such important contextual considerations as the desired level of formality, the intended audience, the subject matter at hand, and the medium by which something is communicated (spoken vs written). To provide another example, I could point out that although it would be important to know the traditional distinction and usage of *who* and *whom*, it would also be important to recognize that there are settings and situations in which maintaining that distinction and using *whom* might be inappropriate. Unfortunately, despite the importance of these larger contextual considerations in effective communication, such considerations are largely ignored by some of the more rigid usage prescriptivists. We might note, for example, Strumpf & Douglas (cf. 2004:280–81, 290–93), whose directions on the use of *who* vs *whom* seem entirely based on formal usage rules about grammatical case, without regard to the larger communicative situation.

5. CONCLUSION. The above discussion doesn't exhaustively address the ways that prescriptivists have contributed to language confusion. Most of my previous discussion was limited to the effect of prescriptivism on resulting forms and structures that could be ambiguous. But I wish to

conclude by briefly acknowledging some further ways that prescriptivists have fostered language confusion, even if not in specifically prescribed forms. Indeed, they often help promote or perpetuate some false notions about language and about the nature and purpose of a standard dialect. I previously noted the tendency among some prescriptivists to assume the appropriateness of a standard form without some consideration of the larger context. But Anne Curzan (2009:875) highlights some additional “myths” that are commonly assumed about “Standard English and prescriptive grammar.” In addition to the myth about the clarifying role of prescriptive grammar, which I mentioned at the beginning of this article, she also notes the myth that “language change involves the corruption of the language, and prescriptive rules will stop that corruption” (Curzan 2009:875) and the myth that “Standard English is [inherently] better than other varieties of English” (2009:876).

In addition to promoting some erroneous myths about language, some prescriptivists have also indirectly discouraged thoughtful debate that might otherwise yield clearer and more principled usage practices. We have all noted the remarkable success of Lynne Truss’s prescriptive and best-selling book, *Eats, Shoots & Leaves*, which bears the revealing subtitle, “The Zero Tolerance Approach to Punctuation” (2003). We may also note some of the initial reaction in the culture at large to *Webster’s Third New International Dictionary*, a dictionary which broke with earlier tradition and became less prescriptive and more descriptive. At the time of that dictionary edition’s first appearance, *The New York Times* referred to it as “Webster’s Third (or Bolshevik) International” (Finegan 1980:6–7, 13). When prescriptivists issue dogmatic language directives under the guise of such virtues or claims as the preservation of the language, perhaps even the preservation of the moral or cultural health of society, and the promotion of clear expression in the language, they have been able to leverage significant attention and influence in the popular culture. But in so doing, they have also reduced the likelihood of constructive interaction with linguists, whose expertise could yield valuable language insights and direction in usage issues. Generally oriented by their field to research and describe actual language rather than to prescribe forms, linguists would already be reluctant to enter into discussions with prescriptivists about the relative merits of particular usage items, even when noticing a problem with a particular traditional prescription. And I can hardly imagine that the kind of rigid cultural environment fostered by some prescriptivists would make a linguist any more inclined to enter such discussions.

But that could change. Some years ago, Saul Levin, then president of the Linguistic Association of Canada and the United States, gave a presidential address in which he argued in favor of some involvement by linguists in providing direction on the formation of usage rules as some usage questions are being decided. On that occasion he said:

“The best qualified linguists are not obliged to leave it entirely to schoolteachers on the one hand and journalists like Edwin Newman and William Safire on the other. While anyone is free to make his or her views known, a linguist’s views may be worth more. . . Many linguists, however, are wedded to the idea that if linguistics is a science, they must in principle be committed to neutrality—being aware of whatever differences in expression are semantically equivalent, or nearly so, but not declaring one correct and another incorrect. . . But insofar as the standard is in flux, I maintain that they are in a position to use their heads, if they will, and not only make a rational choice for themselves among the possibilities

but also explain to the public what is the advantage of one expression over another, or why there is no advantage”
(Levin 1982:3–4).

Similar sentiments have been expressed by the eminent linguists Sidney Greenbaum (1986:192, 194) and Steven Pinker (1994:413–14). It would of course be a mistake for linguists to abandon their respective research endeavors to invest themselves in addressing all the various usage issues, but we aren’t dealing with an all or nothing proposition. Some linguists with information and insights on language forms, patterns, or behaviors that are particularly relevant to specific usage matters should not be afraid to weigh in on those usage matters from time to time, thus circumventing some of the mischief that might otherwise develop unchecked. This could be particularly useful for usage matters where “the standard is in flux” (Levin 1982:4). By introducing some linguistic insights into the realm of usage discussions, linguists may even help nudge some usage prescriptions more in the direction of greater clarity, a goal that prescriptivists claim to pursue.

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A SYSTEMIC FUNCTIONAL GRAMMAR OF THE EARLIEST OLD ENGLISH TEXTS

MICHAEL CUMMINGS
York University, Toronto

Abstract: A systemic functional grammatical analysis of the earliest datable Old English texts could include the Bewcastle Cross inscriptions, the Ruthwell Cross version of the Dream of the Rood, the Franks Casket inscriptions, Cædmon's Hymn, Bede's Death Song, The Leiden Riddle, the laws of King Æthelberht of Kent, the laws of kings Hlothhere and Eadric of Kent, the laws of King Wihtred of Kent, and the laws of King Ine of Wessex. Sentences and sentence fragments in these texts are representative of the earliest extant evidence for English grammar. Textual analysis helps to resolve the question of what typical Old English grammar structures are actually attested before the earliest possible date for the Beowulf text and also the problem of how much of the Old English grammatical system is represented at this early stage of attestation. It turns out that most of the interpersonal clause roles at least are well represented, with the exception of modal adjuncts.

Keywords: Old English, systemic functional, lexicogrammar, interpersonal, clause, mood, paraphrastic verb, system network

Languages: English, Old English

SYSTEMIC FUNCTIONAL LINGUISTICS (SFL) is an approach to modelling which sees language as a stratificational realization of its social context. Social context is construed in terms of genres and genres are realized by registerial choices. Register is realized as meanings within a discourse semantics, in turn realized by the stratum of lexicogrammar, seen as a continuum of realizations from the more lexical to the more grammatical (Halliday & Matthiessen 2004:19–33; Martin 1992:1–21, 493–497). Modelling an historical dialect, as opposed to a contemporary dialect, in terms of SFL offers the additional challenge of an extremely limited corpus of data. An SFL model for an historical dialect will inevitably show not only differences which account for historical change, but also a more limited potential of resources within every stratum. This challenge becomes acute if one contemplates the earliest stage of historical dialect. Nevertheless this paper attempts to offer at least a partial SFL account of the lexicogrammar of the earliest extant texts of English. The object is to get some sense of what the earliest extant grammar patterns in English look like.

1. ELEMENTS OF SYSTEMIC FUNCTIONAL GRAMMAR. SFL modelling in this paper will be restricted to just the lexicogrammatical stratum. The approach taken here as in other strata is three-fold. One may want to view a unit of lexicogrammar like the clause in terms of its representation of extra-linguistic reality. This is the experiential perspective. One may want to view the clause as a speech act, i.e., in terms of its representation of relations between speaker and auditor. This is the interpersonal perspective. Or one may want to view the clause in terms of its cohesion and informational relations to other clauses in the same text. This is the textual perspective. Each of these points of view understands the elements of clause structures to comprise different sets of functions respectively. Any particular wording thus has three different sets of roles to play (Halliday & Matthiessen 2004:29–33).¹ An example of the structural labelling produced by this kind of analysis is in **Table 1**.

	<i>This</i>	<i>is</i>	<i>the house that Jack built.</i>
interpersonal	Mood		Residue
	Subject	Finite	Complement
experiential	Identified	Process: relational	Identifier
textual	Theme	Rheme	

Table 1. Triadic SFL analysis of a clause.

In addition to structural analysis, SFL offers a paradigmatic analysis in the form of networks of systems of potential choices. For example, on the lexicogrammatical stratum, a network of choices for mood within the interpersonal perspective would offer a choice between indicative and imperative clauses, the former realized structurally by the inclusion of Subject and Finite elements in the clause, the latter by a high probability that neither will occur in the clause. If the clause is indicative, a subsequent choice is between declarative and interrogative clauses, realized structurally by the sequencing of Subject before Finite, or Finite before Subject respectively. A choice subsequent to that of interrogative clause is between Wh- and non-Wh-interrogatives (Halliday & Matthiessen 2004:22–23). The notation for such networks in diagrammatic form (explained below) can be seen in **Figures 1** and **2**.

2. EARLIEST OE TEXTS. The oldest datable English texts appear to comprise ten items, poems, inscriptions, and law codes, stretching in origin from about 600 CE to about 700 CE. Perhaps the most famous of these is Cædmon's Hymn (CH), nine verse lines of OE poetry, attributed by Bede to the poet Cædmon, as the first fruit of his divinely inspired mission to extemporize religious poetry in the Old English vernacular. Bede provides a Latin version of the poem, and various manuscripts offer OE versions. The oldest OE version seems to be the Old Northumbrian text in MS Cambridge University Library, KK 5, 16. It is to be dated 734–737 CE and is thought to represent the state of the English language around 700 CE (Smith 1968:1, 10–11, 19–23, 38, 40).

Another very famous text is the Dream of the Rood (DR) poem in the Ruthwell Cross version. This text of 18 verse lines is inscribed in runes on the shaft of the cross monument at Ruthwell, Dumfries. It appears to be an early version of a segment of a much longer poem given

¹ SFL also models a fourth perspective, the logical, which accounts for conjunction in the broad sense, and is associated with the experiential under the more general label “ideational” (Halliday & Matthiessen 2004:309–310).

the same name which belongs to the Vercelli Book MS from the 10th century. The dialect is again Old Northumbrian, and the date, inferred from that of the cross itself, is c. 700–750 CE (Page 1999:145–148).²

The five-line poem Bede's Death Song (DS) is uniquely recorded in a letter from St. Cuthbert to Cuthwin, which testifies that it is the last of Bede's vernacular verse works. As a text, then, it can be dated to 735 CE. The earliest MS, however, is late 9th century, so the grammatical morphology and spelling of the text may be much later than the text itself (Smith 1968:4–7, 15–17, 23–26, 42).

The Leiden Riddle (LR) is more difficult to date, even as a text. It appears to be a translation of Aldhelm's Latin riddle *Lorica*, and if made by him, then dates between 695–705 CE. But there is no evidence it was the author's translation, and like Bede's Death Song, is contained in a MS from the late 9th century. The dialect is Northumbrian, perhaps as early as the middle of the 8th century (Smith 1968:7–10, 17–19, 23–26, 44, 46). This would suggest that the text at least dates from within our period.

The Franks Casket is a whale-ivory box with heavily incised pictures depicting various subjects from pagan tradition and Romano-Christian tradition, including the famous juxtaposition of Weland's smithy and the adoration of the Magi. Mainly associated with the pictures are carved runic inscriptions in Old Northumbrian. The box and its inscriptions date from about 700 CE. Four of the inscriptions are of sufficient length to show clause grammar, of which two are recognizably Old English verse (Page 1999:25, 172–179).

The cross shaft at Bewcastle, Cumberland, has runic inscriptions similar in date and style to those of the Ruthwell Cross. However, due to deterioration, what is now decipherable is much less than what 19th-century viewers thought they could see. I am taking the conservative approach and suppose that what is still extant is fragments of two clauses, an indicative mood clause with at least Subject, Verb, and Direct Object, and the verb from an imperative clause (Page 1999:144–145).

The laws of kings Æthelberht of Kent, Hlothhere and Eadric of Kent, and Wihtred of Kent are all contained in the 12th-century MS *Textus Roffensis*. However, the 12th-century scribe methodically preserves archaisms in phonology, orthography, word morphology, and even verbal group syntax, leading us to suppose that the clause syntax also must respect the originals, which will fall into the period c. 600–c. 700 CE. (Oliver 2002:25–51, 60–81, 126–133, 152–163). The laws of Ine of Wessex (c. 700 CE; cf. Liebermann 1916), also preserved in the *Textus Roffensis*, can be similarly supposed to show an original clause syntax.

3. RESTRICTIONS. For the sake of brevity, the grammatical description of these earliest texts is restricted here to just the interpersonal perspective and the clause unit. This restricts discussion to just the set of clause elements Subject, Finite, Predicator, Complement and Adjunct (Halliday & Matthiessen 2004:111, 121). The system networks under discussion then will comprise the mood network and a few other interpersonal clause systems. The texts under discussion here are also restricted. From the whole set of earliest datable English texts, only the non-legal texts are described, comprising an extremely small collection of clauses, as seen in **Table 2**.

² The association between the date of the monument and the date of the inscription has long been held, but has also been challenged (Conner 2008:25-51; Page 1999:147).

TEXT	SOURCE	APPR. DATE	DIALECT	CLAUSES
Dream of the Rood	Ruthwell Cross	700	O. Northumbrian	16
inscriptions	Bewcastle Cross	“	“	3
inscriptions	Franks Casket	“	“	9
Cædmon's Hymn	MS C.U.L. KK, 5. 16	“	“	5
Bede's Death Song	MS St. Gall 254, p. 253	“	“	4
Leiden Riddle	MS Leiden, Voss 106, 25b	“	“	12

Table 2. Sources.

4. STRUCTURAL ANALYSIS AND REALIZATIONS. The SFL approach to the clause as an interpersonal exchange is grounded in the social roles of demanding and giving, and the two commodities, information, and goods & services. Demanding information is typically realized by the choice of interrogative mood, with a question clause. Giving information is congruently realized by the choice of declarative mood, with a statement clause. In relation to the other commodity, goods & services, demanding is via the imperative mood, with a command; and giving goods & services is seen to be an offer, with no independent mood choice. The respective grammatical realizations of question, statement, and command depend on the structural element of the clause termed Mood, with its two primary components, Subject and Finite. Statements typically show Subject and Finite sequence, questions Finite-Subject sequence, and commands typically have neither, thus no Mood element at all. Some variations in the form of statements, questions, and commands can be referred to grammatical metaphor, in which information may be demanded in the form of a statement, or a service may be demanded in the form of a question, and so forth (Halliday & Matthiessen 2004:106–115, 138–140, 634–635). Non-metaphorical variations in word order often have a textual purport.

Our earliest OE clauses manage to demonstrate only the giving of information, and the demanding of a service, realized then only as statements in declarative mood and commands in one form or another of imperative. Example (1) shows the typical order of Subject before Finite, the Finite element realized by the tense and polarity features of the verb word. On the other hand there are an untypical number of declarative clauses which front the verb word, especially in the Dream of the Rood segment, as in (2). All the same, when the verb word is not fronted, the Finite usually follows the Subject, though not always contiguously (as in [1]).

- (1) *he aerist scop*
‘he first created’ (CH5, Smith 1968:38)
- (2) *[+.nd] geredæ hinæ od almeittig³*
‘stripped himself God Almighty’ (DR1, Page 1999:147)

The Subject element in the declarative mood clauses shows quite a variety of structural realizations, beginning with the simplest, which is omission, as in (3). A Subject may also be as

³ Page's notation for runic characters as observed includes italics in square brackets (inferred despite severe damage), italics (‘slightly worn’), ‘[.]’ (missing rune or runes), (voiced velar), and (ambiguously either unrounded high front vowel or voiceless palatal or velar spirant). The ‘+’ represents a cross. See Page 1999:40, 46–47, 53–55, 58.

simple as a pronoun, as in (4), or a pronoun with an appositive, as in (5); but it is more usually a lexical nominal group of varying degrees of complexity, with or without appositive, as in (6–7). The most complex is in (8), with two Modifiers, a Head, and a rankshifted adjectival nominal group Qualifier element. Once a word complex consisting of a series of names serves as Subject (cf. Halliday & Matthiessen 2004:329–334, 486–487).

- (3) *Nu scylun her an hefaenricaes uardl*
‘Now let us praise the guardian of the kingdom of heaven’ (CH1, Smith 1968:38)
- (4) *þa he walde on al u gisti a*
‘when he would on gallows climb’ (DR2, Page 1999:147)
- (5) *sue he uundra ihuaes, / eci dryctin, or astelidæ*
‘as he of each of wonders,
eternal Lord, the origin ordained’ (CH3–4, Smith 1968:38)
- (6) *moncynnæs uard*
‘guardian of mankind’ (CH7, Smith 1968:40)
- (7) *eci dryctin . . . frea allmecti*
‘eternal lord . . . ruler almighty’ (CH8–9, Smith 1968:40)
- (8) *se ueta uon uundrum freori*
‘the damp field, wondrously cold’ (LR1, Smith 1968:44)

A clause usually contains two separate verbal elements, the Finite belonging to the Mood stretch, and the Predicator belonging to the rest of the clause, the Residue stretch. The Finite is purely grammatical, whereas the Predicator is also lexical in its realization. When the Finite is realized solely as the tense and polarity aspects of a single lexical verb word, it is said to be fused with the lexical Predicator element, also realized by the same verb word. This was the case in (1). The Finite may also occur as a single verb word in itself, either as the copular verb, and without Predicator (9) or accompanied by a Predicator element in a truly paraphrastic construction, as in (10) (cf. Halliday & Matthiessen 2004:111–112, 121–122).

- (9) *kris[t] wæs on rodi*
‘Christ was on the cross’ (DR11, Page 1999:147)
- (10) *ic w[æ]s mi[b] s[or] u[m] gidræ[f.]d*
‘I was afflicted by sorrows’ (DR14, Page 1999:147)

There are at least four instances of true paraphrastics in our OE clauses, all passive voice constructions, as in (10). The other paraphrastics, such as we have in Modern English, all develop later. The perfective aspect and the futurative modal paraphrastics don’t develop out of their lexical matrices until later OE, and the progressive aspect paraphrastic doesn’t really become prevalent until the Early Modern English period (Cummings 2010:39–42).

As elsewhere in OE texts, there are in these clauses various seeming- or pseudo-paraphrastic constructions, which are actually to be understood as complexes of lexical verbs (cf. Halliday & Matthiessen 2004:515–519). Thus the verb *sculan* of (11) is the ancestor of our modern “shall” auxiliary, but remains here in its original lexical condition, meaning “obliged.” The verb *willan* of (12) is the ancestor of our modern “will” auxiliary, but retains here its lexical meaning “desire.” Four more instances involve *sculan*, *willan*, and *dearr*. In all of these constructions, the first verb word in the complex fuses Finite with Predicator, and the second realizes the continuation of the Predicator.

- (11) *scylun her an*
 ‘let us praise’ (CH1, Smith 1968:38)

- (12) *walde . . . gisti a*
 ‘would climb’ (DR2, Page 1999:147)

What in the clause is not the Mood is therefore the Residue. The elements of the Residue are the Predicator, the Complements and the Adjuncts. A Complement is a nominal element other than the Subject and may be seen to include traditionally-termed direct and indirect objects as well as predicate complements. Adjuncts are the adverbial elements of the clause, sometimes realized by nominal groups as well as adverbial groups and prepositional phrases. Some Adjuncts lie outside the Residue; those falling within it are restricted to a type called circumstantial, which give background information (Halliday & Matthiessen 2004:122–133).

Predicators are amply illustrated in Examples 1–5 and 10–12. Complements in these earliest Old English clauses include objective Complements, equivalent to direct object; dative Complements, equivalent to indirect object; and intensive Complements, i.e., predicate complements. They are always nominal. At their simplest, they may be pronominal accusatives, as in (13). More often they are lexical nominal groups. Examples (14–16) show these at their most complex, respectively, a dative, an objective, and an intensive Complement.

- (13) *Uyrmas mec ni auefun*
 ‘Silkworms have not woven me’ (LR9, Smith 1968:46)

- (14) *aelda barnum*
 ‘for the children of men’ (CH5, Smith 1968:38)

- (15) *uundra ihuaes . . . or*
 ‘of each of wonders . . . the origin’ (CH3–4, Smith 1968:38)

- (16) *thoncsnotturra than him tharf sie . . .*
 ‘more prudent than it be necessary for him . . .’ (DS2, Smith 1968:42)

Circumstantial Adjuncts in the Residue show a great variety, realized by prepositional groups, as in (17); adverbial groups, simple or complex, as in (18–19); and nominal groups also, as in (20), and, as pronoun, (21). Adjuncts outside the Residue in both Old and Modern English include types termed conjunctive Adjuncts, which specify clause linkages, and modal Adjuncts, adverb words, or groups mainly indicating degrees of probability, frequency, willingness, or

necessity. In these earliest Old English clauses a few conjunctive Adjuncts occur, such as *aerist* ‘first’ preceding *tha* ‘then’ (CH 5–7), or *huethrae suae eh* ‘however’ (LR 11). What is most striking is the utter absence of modal Adjuncts. The style of these texts is accordingly very spare and economical, avoiding altogether any modalizing.

- (17) *on al u*
‘on gallows’ (DR2, Page 1999:147)
- (18) *fearran*
‘from afar’ (DR12, Page 1999:147)
- (19) *uidæ ofaer eor u*
‘widely over the earth’ (LR11, Smith 1968:46)
- (20) *uyrði craeftum*
‘by fate’s skills’ (LR9, Smith 1968:46)
- (21) *Uundnae me ni bia ueflæ*
‘twisted for me are not woofs’ (LR5, Smith 1968:44)

5. SYSTEMS DERIVED. In order to introduce the paradigmatic analysis of all these grammar features, **Figure 1** presents a system network analysis for the interpersonal grammar of the whole OE corpus.⁴ This network begins with four simultaneous systems of choice for **major clauses** (thus excluding cries, exclamations, etc.). But for our earliest OE clauses, the choices between vocative and non-vocative and between modally assessed and not modally assessed clauses are irrelevant, since these contrasts are not represented. That leaves just two initial systems of choice, between free (independent clauses) and bound (dependent clauses), and between positive and negative polarity. The choice of a bound clause leads to a subsequent choice between finite and non-finite bound clauses, and this is also represented by the earliest clauses. However the lack of modal Adjuncts includes the lack of Adjuncts preposing a comment at the beginning of clauses, so the only system subsequent to the choice of free clause is a choice between declarative and imperative clauses. The lack of interrogative clauses and any realization of modality effectively terminates the system network at this point. A further system could be added to the mix, a choice between Subject assessed and not Subject assessed, to account for the presence or absence of an explicit Subject. This leaves just five systems of choice to describe the interpersonal data represented, which are shown as networked in **Figure 2**. Although the systems of **Figure 2** are represented in the data, the networking itself is only heuristic in one aspect. The simultaneity of choice between free and bound, positive polarity and negative polarity would suggest that all particular types of clauses are either positive or negative, but in fact the data shows only a few types with negative polarity.

⁴ In SFL network notation, systems of choices between alternatives are denoted by square brackets, e.g., the choice between **free** and **bound** dependent on the entry condition **major clause** in **Figure 1**. Systems that pertain to the same entry condition are said to be **simultaneous** and preceded by curly brackets, e.g., **free** and **bound**, **positive** and **negative**, etc. A pair of alternative entry conditions here – either indicative or finite bound – is represented by a reverse square bracket.

6. CONCLUSION. The description which is now concluded is clearly a work in progress and needs to be supplemented by the much larger corpus of the early law codes. However it already shows a structural clause grammar for the interpersonal function which has few surprises for anyone conversant with the grammar of later Old English. Most of the interpersonal clause roles are well represented, with the striking exception of modal Adjuncts. The paradigmatic network grammar revealed is scanty, especially because of the lack of interrogative mood choices and the modals, but this may be ascribed to the minute size of the corpus, and has no implication for the actual state of the language.

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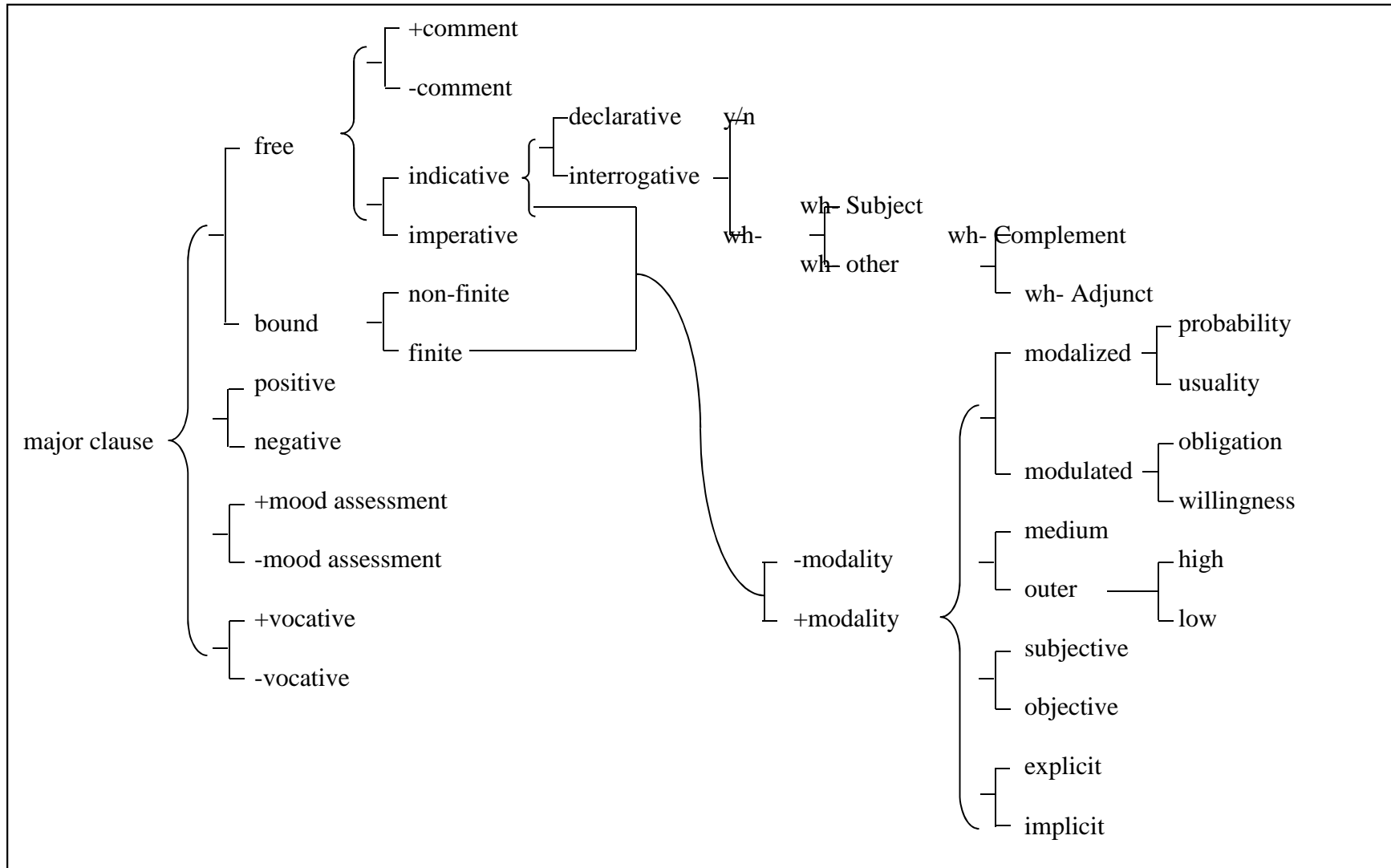


Figure 1. Partial OE interpersonal network (Cummings 2010:57)

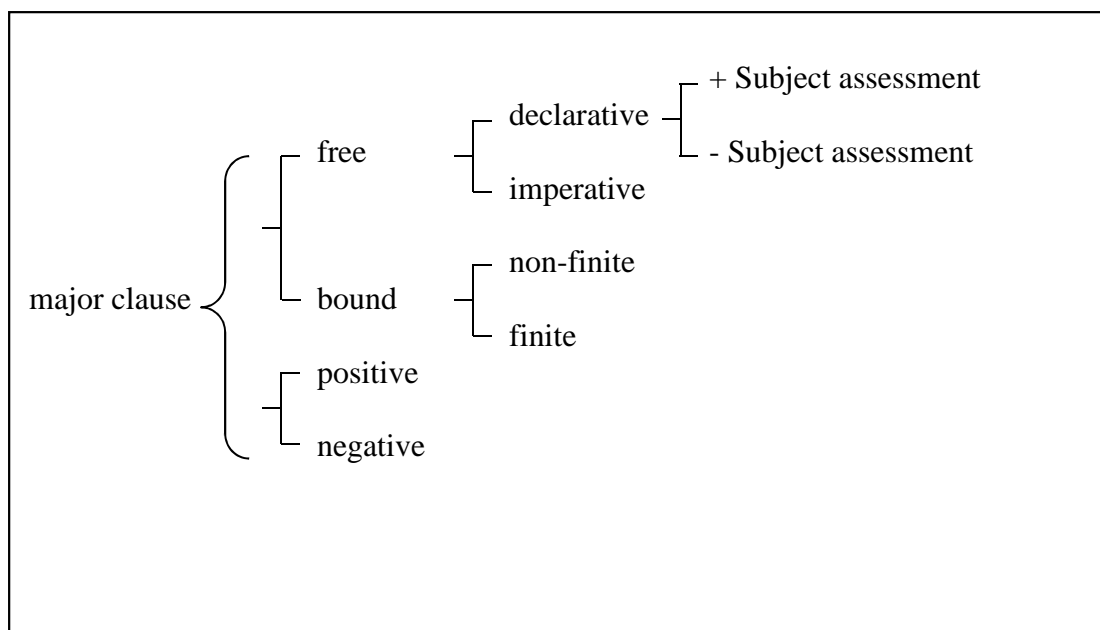


Figure 2. Partial EOE interpersonal network



JUST CHANCE? THE ROLE OF CHANCE IN HISTORICAL LINGUISTICS

ROBERT ORR
Ottawa

linguistics ~~‘replicated laboratory experiment’~~ adapted from Diamond (1998: 62)

“... the Empire can be exceedingly difficult to explain... The Indefatigable Johann Jakob Moser, who found time outside his legal career to compose six hundred Protestant hymns and raise eight children” (P. Wilson 2009:12).

“... in paleontology, luck plays a role, and so does conjecture. A paleontologist assembles a framework from the fragmentary traces of a creature that were accidentally preserved in stone by a capricious geological process - a process as unpredictable as the preservation of spoken folklore over countless generations and upheavals” (Mayor 2005: xxxii).

Abstract: This paper constitutes a preliminary attempt to set some broad parameters through which to view the factor of chance in historical linguistics (HL), especially from a non-deterministic point of view. It starts by discussing the scope of chance and goes on to discuss its position, both in the actual subject matter and the course of research thereinto. After citing several apparently random examples of chance, two frameworks from evolutionary biology are cited for comparison purposes: Gould’s conifer metaphor and Conway Morris’ distinction between diversity and disparity. These are compared to roughly equivalent linguistic frameworks. Some problems with both are noted, and the paper concludes by discussing the onrushing apocalypse seen by many scholars as facing both diversity and disparity in human language, where chance also has a role to play.

Keywords: Historical linguistics (HL), chance, anecdotal, random, the nick of time, diversity, disparity, apocalypse.

Languages: English

THE SHEER COMPLEXITY OF LANGUAGE AND A PARALLEL FROM THE SCIENCES. The overall field of language and linguistics is simply breathtaking in its range, on both on diachronic and

synchronic levels. It is not even clear how much of a grasp we have on the extent of this range. The problem is compounded by its very position in scholarship, even to the extent that the faculties where university linguistics departments are located vary from institution to institution, see Orr (2006: 225–29) and the literature cited therein.

This paper will mainly confine itself to manifestations of chance in historical linguistics (HL). It develops an aside from Orr (2011:267): “Linguistic fieldworkers and other researchers have preserved many forms in the nick of time, a topic that has become more urgent in recent years.” Its primary goal is a preliminary attempt to set some broad parameters through which to view the factor of chance in HL. A bewildering amount of apparently random linguistic complexity appears to have arisen purely by chance, and this is regularly admitted by many historical linguists (for one of the most recent, see McWhorter (2011:183): “Much of what determines which words go out of fashion and which hold on is chance”; although discussion thereof is no exception, in actual fact it is usually relegated to scattered comments on specific aspects, which can be found in almost any work on linguistics.¹

The potentially infinitely multifaceted nature of chance in HL and its sheer unpredictability may be illustrated by a brief consideration of the topic of analogy, which is extremely hard to define rigorously; its very validity as a scholarly concept has even been called into question. The literature on analogy is simply brimming with comments such as “trial and error . . . too complex”; “the immense variety of changes”; “economic or political predictions. . . informed guesses”; “. . . abduction is the guess . . . the weakest form of inference, for it leaves room for error and variation”; “the vast number of features that have to be considered, and the impossibility of determining whether every pertinent fact or factor has been included”; etc., see Orr (2000:77–82) and the literature cited therein for discussion.

Similarly, the impossibility of surveying all relevant data and attempts to cope therewith inevitably lead to a situation where chance appears to play a role in allegedly hard-science fields such as climate change, see Plimer (2009:12, 15, 338–39), which describes the variables in considerable detail. A glance at Plimer’s table of contents shows him listing history, archaeology, geology, astronomy, ocean sciences, atmospheric sciences, and the life sciences as fields needing to be considered when researching climate change. He makes a point worth emphasising: “The contrast between processes in real time and computer simulations tell a different story from reality... Laboratory experiments have to provide results in a short time to be reported in scientific journals (cf. the adaptation of Diamond 1998:62, cited as an epigraph to this paper).” Fagan (2000:xix) offers a similar list: “esoteric byways: Hudson Bay Company history, European oil paintings, the North Atlantic oscillation, and Dutch sea defenses.” Lomborg (2001:414, note 2228) refers to “poorly calibrated and unstable instruments” as a further problem, and asks: how can we be sure that the data on which we build theoretical edifices are as accurate as they should be?

Of all the sciences, an appropriate field for comparison in this paper is paleontology, where scholars are faced with similar issues, see Mayor (2005:xxxii), also cited as an epigraph to this paper. There is a long tradition of comparing HL and paleontology by scholars from both fields, see Alter (1999:2–6), who offers a comprehensive discussion, citing comments on linguistic development by such pillars of nineteenth century science as, e.g., Darwin (16–17, 20–22, 25, 100–105), Huxley (49–50, 70), and Haeckel (116), balanced by comments on biological evolution by such pillars of nineteenth century HL and philology as, e.g., Schleicher (11, 73–78,

¹ The recognition of chance as a factor in any sort of development goes back a long way, cf. the famous passage from Ecclesiastes (IX:11); for a recent citation, see, e.g., Ben-ton (2008: 198).

88, *passim*), Müller (79–84, 89, *passim*), and further references. He suggests that the peak of comparative work involving the two disciplines fell in the 1860's (cf. especially Alter 1999: 108–109), and goes on to note that "... two utterly different sciences were alike in both method and results" (Alter 1999:122).

On occasion, the same figure turns up with actual scholarly contributions to both fields. One of the earliest examples thereof is provided by Edward Lhuyd (Lhwyd), who put Celtic linguistic studies on a scholarly footing, with his *Archaeologia Britannica* (1707; see Evans & Roberts 2009). Lhuyd was the first to recognise the division into Brythonic (P-Celtic in Lhuyd's terminology) and Goidelic (Q-Celtic in Lhuyd's terminology, cf. Chapman 1992: 205–207), as well as making substantial contributions to the study of individual Celtic languages, see, e.g., Berresford Ellis (1974: 29, 100–108), *passim*, for Cornish. Meanwhile, in 1699 he published a study titled *Lithophylacii Britannici Ichonographia*, on the fossils in the Ashmolean Museum, which he claimed: "... contains the Grounds of a new Science in Natural History": palaeontology (see Ellis 2003:65). More narrowly, Lhuyd was also the first to describe the trilobite, in 1698, almost simultaneously with his substantial Celtic contributions (Fortey 2001:24, 43–44; Ellis 2001:46), although the actual term 'trilobite' was coined by Brunnich nearly a century later.

2. CHANCE: THE ANECDOTAL LEVEL. The purpose of this paper is to offer a glimpse of the scope of the problem of chance in linguistics concentrating on HL, beginning by recalling some selected random manifestations thereof from my own experience,² and then moving onto some overarching frameworks, which have been suggested as ways of providing an overall view of language as a whole, especially including HL, while at the same time allowing for some degree of chance. For our purposes here, Chance may be split on a preliminary basis into **Anecdotal Random Chance** (2.1) and **Nick-of-Time Chance** (2.2).

2.1. ANECDOTAL RANDOM CHANCE. This section may be opened by recalling the dictum: "Every word has its own history" (actually traceable to Jakob Grimm, see Orr (1993:303, editors fn.), cf. Joos (1957a:96): "the American (Boas) tradition that languages could differ from each other without limit and in unpredictable ways"... and (1957b:349) "...there is nothing conscious, nothing deliberate, about language-design."³ The sheer amount of detail, much of it inaccessible, implied in such a framework provides a glimpse of the scope of our task, comparable to the example cited as an epigraph to this paper from Wilson 2009. It is compounded by the problem of selectivity: how do we manage to eliminate bias in any data selection? For paleontology, Benton (2008:136–55, especially 146–50, 152), suggests that an approach making use of cladistic⁴ data would make a major contribution to resolving the problem of selectivity,

² I was sent a copy of Tranter (1993) by chance, just in time to read and cite the excellent examples it cited for inclusion in Orr (in press). In retrospect an example of two levels of "luck built on chance" may be cited from Orr (1992:249–50), which cites Mir ev (1971:83) for an example where chance plays an important role: "... why this phenomenon becomes widespread in Russian, while it is poorly developed in Bulgarian, subsequently completely disappearing." It should be noted here that I only found Mir ev's article by chance, which I had previously been unaware of, in a collection I had happened to purchase earlier. Any other author, of course, could probably cite equally startling examples from their own experience.

³ The oft-cited example of a theoretical group of monkeys typing out the collected works of Shakespeare points to the sheer complexity involved in considering chance in both HL and evolutionary biology, see Orr (2000:77), more recently Behe (2008:104–06).

⁴ Cladistics (following Benton 2008:146–48) refers to a method of mapping phylogenies and classifications used in

combined with a thorough search of the fossil record, and also taking into account such statistical correctives as the danger of mixing fields (141), scaling logic and sampling (143), and trees (148).

Specifically, in addition it is less often noted that etymological studies, an underappreciated, albeit important area of linguistics, may also be particularly subject to an especially alarming degree of chance. Just by keeping their eyes open, linguists interested in etymology are confronted with material and unexpected leads on a constant basis, and it is often unpredictable which one may suggest itself for pursuit on a given occasion. Some sort of index, whether manual or electronic, would have to be kept constantly at the ready for fresh entries, in case a researcher decides to pursue a lead which might present itself out of the blue and eventually result in another article. It is quite possible, for example, that if I had not known Gaelic, and specifically in this instance, been studying a map where Scottish Gaelic *sealg* ‘hunt’ was prominent in a local toponym⁵ at the same time as I first read Shevelov 1964 (specifically 1964: 403), and subsequently not had my memory jogged by reading the relevant passage in Vakulenko & Danylenko (2002:94), I might never have become interested in some of the discrepancies in the standard etymologies proposed for subsuming Russian (selezenka) ‘spleen’, (selezen’) ‘drake’, and Scottish Gaelic *sealg* (see Orr 2008:79–80, and the literature cited therein).

2.2. NICK-OF-TIME CHANCE. This phenomenon appears so often as a factor in HL that it rates a section to itself. In Orr (2011:267–68) I cite examples of nick-of-time chance, mainly involving vanishing toponyms, oronyms (hill names),⁶ etc., the loss of which would have robbed us of vital insights into the respective local history, cf. the originally Scandinavian oronyms on Rhum, (*Ainshval*, *Askival*, *Trollaval*) and note that: “Linguistic fieldworkers and other researchers have preserved many forms in the nick of time, a topic that has become more urgent in recent years.” Nick-of-time chance may also be illustrated by Schmalstieg’s remarks (1980:18, commenting on Comrie 1978:393) on the implications of the recording of Dyirbal (Queensland): “It seems quite possible that the Dyirbal population may have disappeared without a trace and notions of [syntactic – RAO] ergativity⁷ would have remained unhampered by new facts”. Such a scenario approximates what actually happened: the recording of traditional Dyirbal was a close-run thing, a sobering example which bears repeating: Dixon’s main informant passed away in 1975, about a dozen years after Dixon started work on it. The language was described as dying and as losing many distinctions a decade later (see R. Dixon 1972, 1983; Schmidt 1985:233–34); see also Orr (2011:267) for further discussion.

Another category on which our views become transformed when considering languages

evolutionary biology based on tracing the exact origins of shared features, and the branching nodes which can be deduced therefrom.

⁵ *Strathnasheallag* (*Srath na Seilge*), on OS Seventh Series Sheet 20 “Ullapool”.

⁶ On a personal note, I myself find oronyms an area full of research interest and am possibly displaying a bias here.

⁷ Dyirbal provides us with one of our best examples of “syntactic ergativity”, which is best described as a passive made obligatory, where ergative constructions pervade the whole of the grammar of a given language. Conversely, morphological ergativity is more peripheral and is often manifest only in a marked case ending for the agent, and does not affect the rest of the grammar (see Trask 1979 for further discussion). Although no language where **all** subject-object relations are organized along ergative lines has yet been found, Dyirbal perhaps comes the closest to this ideal.

similar to Dyirbal is evidentiality. For Western scholars, evidentiality is mainly associated with Turkish, where it is comparatively rudimentary, and South-East Slavic, where it is better developed. R. Dixon (1997:119–21), and Nettle & Romaine (2000:60–61), however, point out that evidentiality is found in languages spoken in nearly all the continents, and that certain languages have more subtle gradations of evidentiality, e.g., Tuyuca (Amazonia). Tuyuca has grammaticalised five such gradations: **Visual - Non-visual - Apparent - Reported - Assumed**. Dixon loc. cit. goes on to say that only the languages of hunter-gatherer societies seem to have this sort of complex structure, and that the reasons are so far poorly understood (see also below, and Crystal 2000:59). Nettle & Romaine (2000:129) revisit the issue from a different angle, suggesting that there is no inherent reason why languages with such constructions could not serve as metropolitan languages on the order of English, and that conducting business in Tuyuca would even “offer certain advantages as a medium for the legal profession.” Also for Dyirbal, Dixon (1972:48) cites a group of bound forms expressing location-specifying directionality in reference to particular hills, rivers, etc., which would probably undergo major reanalysis or fall out of use completely if Dyirbal speakers had been transferred elsewhere. In her study of a later stage of Dyirbal than that recorded by Dixon, however, Schmidt (1985:95) states that “No systematic study [of the bound location-specifying forms - RAO] . . . was undertaken.”⁸ Moreover, Dyirbal has four noun-classes, organized along lines less familiar to Western scholars, consisting respectively of: I) most animate objects, men; II) women, water, fire, violence, and exceptional animals; III) edible fruit and vegetables; IV) miscellaneous. One can only speculate as to how gender/noun-class in Dyirbal might have evolved if the language had undergone an expansion similar in scope to those of English, Spanish, etc., or even what would have happened if Dyirbal had undergone change while surviving as a vigorous, local official language, albeit with few actual speakers such as, e.g., Faroese.

Even if a language is comparatively well described,⁹ unique constructions may be missed, for a variety of reasons. Harris (2002) shows that this is what has taken place in the process of describing Udi (North-Eastern Caucasus). It has been an article of faith among linguists that genuine endoclititics (clitics that occur inside words) cannot exist. Moreover, she provides evidence of clitics inserted into apparently indivisible morphemes, which would seem to contradict a truism learned in Linguistics 20, i.e., that morphemes, as minimal meaningful units, are indivisible. Yet Harris shows that Udi data provide genuine examples of endoclititics. She begins her treatment of endoclititics by stating that “If linguists are to understand the limits on what constitutes a word,¹⁰ we must come to grips with the data from Udi”, and claiming that her monograph, albeit not the first grammatical outline of Udi, is the first to document the existence of true endoclititics, offering numerous examples of the phenomenon. She also points out that Udi is an endangered language: “the prospects for the survival of the language are extremely dim.” (2002:ix–x, cf. also 4, 13, 15, 282–83).

The situation hypothesised by Schmalstieg is actually fairly commonplace. Several minority

⁸ See van Driem 2001, for similar examples from Himalayan languages.

⁹ “Comparatively well-described” might be seen as a loaded term here. Although Western languages are much better described than most others, some scholars maintain that we are still very far from having available comprehensive linguistic descriptions of even such well-studied languages as English or French.

¹⁰ I would like to express my appreciation to one of the referees for this paper, who pointed out that in “the argument over endoclititics” abduction-based linguistic constructs such as words and morphemes, loaded concepts like “comparatively well-described” in footnote 9, show the problem of treating words and morphemes as things like tables or chairs.

languages, sometimes with unique constructions like syntactic ergativity in Dyirbal, endoclititics in Udi, or evidentiality in Tuyuca, were only just in the process of being recorded as they were becoming extinct, or even after their actual extinction. On a continental scale (the Americas), in their discussion of Nichols loc. cit., Nettle & Romaine (2000:39) make the sobering point that “If Johanna Nichols had arrived on the scene one hundred years later, she would very likely have found a New World completely covered by Indo-European”,¹¹ with all the losses that such a situation would have entailed, losing data irretrievably more often than saving it. Corbett (2000: 236–37) actually mentions e-mailing a colleague to check on certain subtle uses of special plural forms in body-parts in an endangered language (Martuthunira, Western Australia). The response was that the last speaker had died before his colleague had had time to check the data. He cites another case (Khamtanga, Ethiopia) where a distinction between different types of plural may have been lost over a century (2000:37 fn. 31). We simply have no way of knowing how many similar examples had occurred over the course of overall linguistic development, with Nick-of-Time chance being Just-Missed chance.¹²

It might be noted, therefore, that we have at least four examples: ergativity, evidentiality, location-specifying directionality, and endoclititics, where the recording of unique constructions may have been a close run thing. Specifically, one may find the Dyirbal situation being played out over and over again. The loss of evidence of such constructions in human language, which is a very real possibility, would be a serious one for general linguistics, but they are no means confined to the languages of hunter-gatherer societies.¹³

It is commonly assumed that gradations such as those documented for Tuyuca and Dyirbal are subtler than anything imaginable on the basis of the more familiar European languages, and much recent linguistic literature has simply assumed that that is the case. The concept of location-specifying directionality, however, provides a partial counterexample, mainly involving idiomatic uses of points of the compass in Insular Scandinavian, which has evolved in historic times. Examples may be cited from the Viking period: the first line of the *Hofuðslausn* in Egils Saga Skallagrimsonar contains the form *vestr* referring to a voyage from Iceland to England, because the original compass was based in Norway. Similarly, in this context the phrase *austr í Vík* ‘eastwards to Vík’ in Norway referred to Southern, not Eastern, Norway. In Norse Greenland, the Western Settlement (*Vestribyggð*) was north, rather than west of the Eastern Settlement (*Eystribyggð*). This usage spilled over to Ohthere’s Old English account of his voyage to the North Cape and beyond: *eastewerd* appears to be attested in the meaning “in the south” (Townend 2002:96–97). Haugen (1957) and Wylie & Margolin (1981:13–45) offer detailed discussion of directional idioms in Icelandic and Faroese respectively (using the cardinal points of the compass plus such concepts as ‘over’, ‘in’, ‘out’, ‘down’, ‘up’, etc.), often showing bewildering variation from island to island or valley to valley. This appears to offer many close parallels to the Dyirbal and Himalayan constructions.¹⁴ Traces of such usage may even be found

¹¹ Here Nettle & Romaine are probably referring only to North America; South America has unendangered aboriginal languages such as Quechua with millions of speakers, and even one which has gained official status: Guaraní in Paraguay.

¹² As Brimelow (1986:266) points out in a slightly different context, “windows of opportunity can close as well as open”.

¹³ A lot of pertinent data may be simply ignored. Lomborg (2001:35–42) refers to the problem of what data to include in any discourse as the “file drawer problem”, for data originally shelved and forgotten, which could have proved vital, see also Orr (2011:268).

¹⁴ De Vries, de Greef, & Marchant (2002: 124–25) point out that such situations were commonplace for the majority of people for most of human history: “Until a few centuries ago, physically experienced space was for most people

in modern English and German: the name *North Sea/Nordsee*, also German *Ostsee*, which contrasts with the Viking age *Vestmarr* (“West Sea”)/*Westsa* (Townend 2002: 106).¹⁵

2.3. CHANCE – DOCUMENTATION. Chance may be expanded to actual linguistic documentation. Many canonical documents, well-known to historical linguists, have been subject to losses (the Horn of Gallehus (1734)),¹⁶ or near-losses (Beowulf),¹⁷ in fire,¹⁸ or charged with being fabrications, e.g., Shakespeare, or have turned out to be actual fabrications, e.g., the Hanka corpus.¹⁹

3. IS LINGUISTICS MERELY “ANECDOTAL”? Therefore, after all the above discussion, one may legitimately pose the question: does the material presented above, and all the material connoted thereby, provide a case for linguistics being “anecdotal”, as vigorously criticised by Yngve & Cisló (2004)? Is there no system at all?

Neither can we fall into the trap of assuming that linguistics is entirely “unscientific” (even if one can agree on a definition of “science”): there is some degree of overlap between linguistics and fields normally cited as ‘hard sciences’, albeit only partial; see also Orr 2006 and the literature cited therein. Moreover, in this context it appears that there has been a retreat: nowadays the optimism expressed by Baudouin de Courtenay nearly a century ago seems misplaced:

«C'est aux mathématiques de l'avenir qu'il reste maintenant à systématiser les phénomènes psychiques et sociaux. Si ces mathématiques apparaissent, viendra alors le temps d'établir de vraies lois régissant le monde physique et social en général et celui des phénomènes linguistiques en particulier. Ces lois, elles seront bien dignes de prendre place à côté des lois des sciences exactes, exprimées par des formules fixant avec une précision absolue les rapports quantitatifs entre les phénomènes physiques.»

confined to an area of a few hours travel on foot - an area of, say 100 km². With ships, horses, and carriages, later trains and planes, it has expanded to the whole globe for a significant fraction of the world's population. . . Even when people in ancient times thought they were drawing a map ‘of the world’, they could not possibly conceive of the entire planet in the way we can, nor could they locate their own position on the planet.” Such subconscious perceptions may have survived a little longer in the Faroes than in most of the rest of Europe, due to the small size of the islands, both individual islands and the archipelago as a whole, and their isolated position.

¹⁵ In some cases originally directional forms have lost their directional semantics altogether, cf. “Western” as in, e.g., “Western culture” (I would like to express my appreciation to the anonymous referee for this paper who pointed this out).

¹⁶ The well-known Horn of Gallehus, first discovered in 1734, included an inscription amounting to a complete sentence in a very early form of Germanic, which has proved vital for the reconstruction thereof. The horn itself, however, was stolen in 1802, and melted down for the gold and we have only the actual text of the inscription as it had already been copied and recopied.

¹⁷ The single manuscript of Beowulf that has come down to us was nearly lost by fire in 1731, which would have had massive implications for Old English studies.

¹⁸ To add a further complication to the mix, fire has been known to **preserve** vital linguistic data on occasion, rather than always being an agent of destruction; much of the Linear B corpus from Minoan Crete was accidentally preserved by a catastrophic fire which hard-baked the tablets onto which the records had been inscribed. Another example is provided by the reemergence of Lucretius’ *De Rerum Natura* during the Renaissance, see Greenblatt 2011.

¹⁹ Cf. the whole corpus of suggestions that Shakespeare’s plays were not in fact written by Shakespeare, and the charges that Václav Hanka, actually responsible for fabricating massive amounts of Old Czech literature, was the real author of the Kiev Folia into the bargain (Hamm 1979).

Baudouin de Courtenay (1927–28: I :323)

About the best we can do in attempting to impose some system here is mention the framework of implicational linguistic universals (“if a language has “B”, then with overwhelmingly more than chance frequency it also has “A”), first developed by Greenberg as long ago as 1961 and developed, mainly involving tweaking a greater mass of detail, by, e.g., Hawkins 1983, Andersen 1983, etc. Much work has been done subsequently on various aspects thereof, see Corbett (2000), Heine (1997), Haspelmath, Dryer, etc.

4. DIVERSITIES AND DISPARITY. Overall, two frameworks from evolutionary biology may be offered as possible parallels to the implicational universals framework for viewing linguistics: Stephen Jay Gould’s “Diversity / Contingency” and Simon Conway Morris’ “Diversity / Disparity”, seen as very broad frameworks with all sorts of eddies (see Orr 2003 for further details) of varying strength in between.

Gould (1989:292–323) hypothesizes an early explosion of diversity in life, followed by the continuous, large-scale *loss* of that diversity. He offers an idiosyncratic, upside-down treatment of the family tree; using the image of a conifer, with the *maximum possible diversity* at the *bottom* of the tree, with constant pruning, by natural selection, of branches as we ascend, into *ever-decreasing diversity*, eventually tapering to a point,²⁰ as opposed to the common image, where the family tree implies ever-increasing diversity, with new branches constantly being put forth.

The phenomenon described by Gould, of course, has occurred over and over again in the history of life, often followed by a rebound of structural diversity (from a successively narrower genetic base), after the loss of genetic diversity, usually the result of a mass extinction. The oft-discussed evolutionary phenomenon of radiation belongs here, e.g., the emergence of many new warm-blooded groups after the Permian extinction, see Benton (2008:220), or the emergence of many new mammalian groups and species after the Cretaceous extinction, or the emergence of a new range of structural diversity in newly-colonised territories (e.g., the case of Hawaii, see Ward 1994:18–24, 235–38). Fortey (2001:178) concludes his description of the evolution of trilobites from the Cambrian to the Silurian thus: “. . . there may have been almost as many species as earlier, but derived from a more limited set of common ancestors,” cf. also Benton (2008:189–90, *passim*), on other Palaeocene invertebrates. Within mammalian evolution, Agustí & Antón (2002) document several cases of losses of diversity, always followed by rapid reemergence of different kinds of diversity, ranging over the whole Tertiary period, especially the Miocene, e.g., ungulates (110–14), rodents (114–15). D. Dixon 1981 projects a massive spread and diversification of the descendants of rats and rabbits to fill in niches left by vanishing wildlife after a hypothesised worldwide extinction of humanity itself. Although he does not deal with this issue as such it is clear that there would be some degree of loss of genetic diversity: Dixon (1981:118–19) gives a chart showing his proposed developments, and of the fifteen mammalian orders he lists as existing during or after the Age of Man, he has five being lost, and most of the others undergoing greater or lesser losses, see also Boulter (2001:192–93).

As pointed out by Laponce (1987:64), one practical difference between HL and evolutionary biology in this context is that, however much one might lament the losses of diversity entailed,

²⁰ One could also cite the modern phenomenon whereby many couples have only one child, thereby generating family trees tapering to points, similar to Gould’s conifer.

humanity could still function with only one common language, whereas evolutionary and ecological pressures arising from the requirements for niches to be filled in various ecosystems would probably make it impossible for only one biological species to monopolise the earth as a single species for any length of time. Benton (2008:21–23) actually suggests that the Earth went through a period where there was only one large land animal, *Lystrosaurus*, followed of course by the radiation of dinosaurs, mammals, birds, etc.

Conway Morris (1999:206) draws a distinction between **diversity of individual lineages** as “the sheer number of species” and **disparity of biological properties** as “range of different types or design forms” within various ecosystems. In broad outline, he suggests that evolution proceeds along convergent, predictable lines, with predictable end-points. The element of chance here consists in the impossibility of predicting WHICH specific animal will evolve to fit WHICH role in any ecosystem. He develops the concept of disparity by pointing out that “the basic ecological structure of marine life has not changed radically since the Cambrian. Then as now it is possible to recognise without difficulty such categories as mud-dwellers, strollers, or swimmers. When **actual faunas** are compared, however, the differences are . . . profound (1999:66)”. In language the differences between the lexica (which can vary infinitely, subject to surface phonological and morphological constraints) and typological structure (which varies far less so) might provide a partial parallel. Conway Morris (1999:202) cites the following theoretical example: “while . . . the evolution of the whales is. . . no more likely than hundreds of other end points, the evolution of some sort of fast, ocean-going animal that sieves sea-water for food is probably very likely, and perhaps almost inevitable.” Similarly, on a more concrete level, in any ecosystem on land the biological property of top carnivore is constant, and nowadays usually, but not always, filled by a mammal.²¹ Conway Morris suggests that **diversity** has been increasing over time, and that **disparity** may either be at the same level as it was in the Cambrian, or perhaps may even have increased.

More specifically a parallel from linguistics to the “evolution of some sort of fast, ocean-going animal that sieves sea-water for food” might be offered by the variety of expressions of the concept of patient/direct object found over various languages: to paraphrase Conway Morris, although the evolution of an *-m (Indo-European) or an *-i (Turkic), might appear a shot in the dark, no more likely than an almost infinite number of possible end points, the development of SOME device to mark the patient (definite or indefinite) is “very likely, and perhaps almost inevitable.” Or, to sum up, ecosystems call for certain roles and communications systems call for certain relations to be expressed

Nichols (1992:22–23) offers a clear parallel within linguistics, which might be given in point form:

- (1) *Genetic* diversity (comparable to Conway Morris’ diversity of species)
- (2) *Structural* diversity (comparable to Conway Morris’ disparity).

Nettle (1999:10–11) argues for **three** different types of linguistic diversity, apparently splitting Nichols’ **genetic** diversity into two:

²¹ Diamond (1987) and Quammen (1996:16–68) actually suggest an example of a non-mammal in this niche: the Komodo Dragon originally evolved as a predator on a small island, probably free of any potential mammalian competitors, to feed on pygmy elephants, which have since become extinct.

(1a) **language diversity** (sheer number of languages)

(1b) **phylogenetic diversity** (number of different language families).

Such a framework could probably be easily adapted to any treatment of biodiversity. I would like to add a further type of linguistic diversity, **stylistic diversity**, to cover various styles (dialectal or register) within a given single language, whether spoken or written. In biology stylistic diversity might be paralleled by the development of variation **within** species, see, e.g., Cox & Moore (2000:64–66). Nichols (1999:234–253) goes on to treat this issue from the linguistic point of view in considerable detail, dividing the continents into *residual* zones and *spread* zones, where residual zones are areas with high levels of genetic and phylogenetic diversity, inhabited by small groups, and spread zones are areas almost entirely covered by one language or group of languages, often comparatively recently arrived. Nettle & Romaine (2000: 36–39) also take up Nichols' distinction between genetic and structural diversity (see also 2.2 above).

It is in light of the above that this section is headed “diversities”.

5. LINGUISTIC AND BIOLOGICAL DIVERSITY. It is often suggested that geographical areas with high degrees of linguistic diversity often include high degrees of biological diversity, and vice versa, and that one almost automatically implies the other, and that such areas tend to be located in the tropics, see, e.g., Maffi 2001, and the literature cited therein. The canonical, oft-cited example is provided by New Guinea, where it is a cliché that every separate valley has its own language, with no apparent relationship to its neighbours. Superficially the linguistic diversity/biodiversity framework appears to work over large stretches of the planet. However, the oft-cited match between linguistic and biological diversity is by no means universal, and it really should not be cited as a given without extensive caveats. The linguistic and biodiversity situations in New Guinea may be contrasted with those obtaining in Madagascar, which is well-known among biologists for its biodiversity, possibly the greatest degree thereof on earth. However, Madagascar has only one common language, belonging to the Malayo-Polynesian group, albeit split into eighteen dialects, and therefore very little linguistic diversity (Tyson 2000:6, 207–09, 214, 225), despite some degree of anthropological diversity (Tyson 2000:2–3, 223–25), Tyson expresses it thus:

“... Malagasy. . . remains a single language spoken by everyone. . . . This is remarkable. That an island as large as Madagascar, with diverse ecosystems cut off from one another by forests, deserts, mountains, or rivers should have but one language baffles linguists. Madagascar's neighbour, Africa, has 1,500 languages. The island of New Guinea, only a third larger than Madagascar, has 700 languages. Why does Madagascar have only one?”²² (Tyson 2000:207–08)

Nettle & Romaine 2000 do not mention Madagascar or the Malagasy language at all, even in discussing Malayo-Polynesian; in fact their only hint of its existence is their world maps of linguistic diversity (2000: 33) where the island is shaded as having “low diversity”, and of

²² It should be noted that the Malagasy language itself is full of typological interest, being one of the very few VOS languages on earth, see Comrie (1981:19, 29, 81, 96), and the literature cited therein, making the omissions in Maffi (2001) and Nettle & Romaine (2000) all the more startling.

biodiversity (2000: 44) where the northern part of the island is shaded as having “high diversity”, and the southern part of the island is shaded as having “medium diversity”. Neither is Madagascar mentioned in the index to Maffi 2001, even though the latter is an extensive compilation on diversity itself, with contributions from nearly forty authors. Similarly the Caucasus, a canonical example of linguistic diversity, is treated cursorily by Nettle & Romaine 2000 (38; 196), and again, left undiscussed by Maffi (2001), surprisingly, considering the themes and topics of their compilations.

The stark mismatch between linguistic and biological diversity in Madagascar might be explained by looking more closely at the nature of the society built by the first arrivals. Perhaps part of the answer to the “Madagascar conundrum” may be deduced by citing the relatively late arrival of humans, who brought with them developed agriculture and animals already domesticated, an essential part of their society, instead of arriving when they were still at the hunter-gatherer stage.

A further example of the mismatch between biological and linguistic diversity may be provided by Lake Baikal, “the Galapagos of Russia”, which is very rich in species of, e.g., crustaceans, freshwater sponges, fish, freshwater seal, see Sparks (1992:228–39), who describes it as “one of the biological wonders of the world”; see also McCarthy (2011:135–38).

Like Madagascar, however, the Lake Baikal area is much poorer in language families than might be expected if there were as close a relationship between biological and linguistic diversity²³ as seems to be assumed: Evenki (Manchu-Tungus), Buryat (East), and Tofalar (South-West), all of which belong to Altaic.²⁴

In Orr 1999 I was perhaps too eager to apply Gould’s model of diversity to historical linguistics; perhaps, however, it may actually fit historical linguistics better than the paleontology for which it was originally designed. Briefly, the linguistic history of Europe shows the ongoing loss of **genetic** and **stylistic** diversity, especially the histories of Italian, English, and Russian in their development from Italic,²⁵ Ingvaëonic,²⁶ and Balto-Slavic respectively, see (Orr 1999:144–48) for further discussion. In all three of those cases, diversity within the linguistic starting points is far greater than within the linguistic end-points, although in each case the linguistic end-points have far more actual speakers, and are spoken over much wider areas than the linguistic starting-points.

In the outline histories sketched above, each stage might be seen as simultaneously including the *loss* of diversity, marked by an expansion of the surviving languages in *area* and *numbers of speakers*. On occasion some degree of diversity/disparity develops; cf. the loss of case in Bulgarian and Macedonian, or in Continental Scandinavian, versus its preservation elsewhere in Slavic and Insular Scandinavian respectively, or the massive infusion of non-Germanic and non-Romance vocabulary into English and Romanian respectively. Nichols (1992:235) points out that expanding homogenous languages (“spreads” in her terminology), encompassing little diversity often leave relic areas in their wake where much greater diversity/disparity is preserved.

²³ Large areas of the Peruvian Andes, the Polynesian Triangle, Lake Ohrid on the Albanian-Macedonian border, Lake Titicaca on the Peruvian-Bolivian border, and the island of Socotra east of the Horn of Africa provide further examples of biological diversity unaccompanied by linguistic diversity. The whole issue needs revisiting.

²⁴ Even if one denies the validity of Altaic as a grouping, there is still very little typological diversity or disparity involved here.

²⁵ As with Altaic, the very validity of Italic as a separate subgrouping comes into question; this, however, does not affect the argumentation here.

²⁶ A subgrouping of West Germanic, including Frisian, Old Saxon, and Old English.

Meanwhile English has dwarfed Continental Ingvæonic,²⁷ and Slavic Baltic, in almost every way (geographically, number of speakers, etc.) except, of course, dialectal diversity, whereas Latin and its Romance descendants have driven other Italic languages to extinction, to say nothing of its expansion at the expense of Celtic, Basque, etc. In this context it has been pointed out that English itself may be in the process of splitting, and developing into separate languages (similar to the evolution from Latin to Romance, Common Germanic and Common Slavic to the modern Germanic and Slavic languages respectively), a parallel to the evolution of life as outlined by Gould 1989 in his view of the family tree (see section 4).

6. APOCALYPSE? One way of synthesising both Gould's and Conway Morris' frameworks is to return to an aspect of the topic hinted at under nick-of-time chance above: currently there is a feeling that the world is haunted by an impending sense of catastrophe in many areas, including an apparent ongoing loss of languages and species throughout the world, which has recently become a topic of some urgent discussion, both in linguistics and in biology; for various aspects of the issue, see, e.g., Schmidt (1985:1–5, 228–34), the articles in Robins & Uhlenbeck (1991), Rouse (1992:37–39), Dixon (1997:107–38), and the references cited therein, Diamond (1997:265–92); Nettle (1999:97), Crystal (2000:20–22), Nettle & Romaine (2000), the articles in Maffi (2001), Corbett (2000: 236–37) estimates that 250/6000 languages are “safe”; most recently Deutscher (2010:235), who mentions “the dire urgency to record and analyze the thousands of exotic tongues [and improve our knowledge of the familiar ones – RAO] that are still spoken in remote corners of the globe[,] . . . the hosts of small tribal tongues that do things very differently from what we are used to” and suggesting that only they can “truly reveal what is natural and universal . . . the race against time is now under way to record as many of these languages as possible before all knowledge of them is lost.” This approach might also be applied to the loss of stylistic diversity in better-studied languages; Dixon (1991:234) cites examples of the loss of dialectal (stylistic?) diversity in English and Fijian.

Nevertheless, not all is doom and gloom. In this context one small ray of hope is reported by Wurm (1996:21) regarding Ainu; (Alby 2001:47 fn) cites statistics pointing to the Kali'na language of French Guyana also undergoing a revival.

For linguistics, the existence of small, isolated (“backward”) communities, also often located on remote islands or archipelagoes, is of paramount importance. In this context Deutscher's call may be partly based on an oversimplification: “remote corners of the globe” do not HAVE to be located thousands of miles away from major linguistic research centres. Trudgill (1992) juxtaposes linguistic developments in Faroese and Norwegian, arguing that languages spoken in small isolated communities, such as the Faroese, tend to manifest all sorts of rare developments over the whole spectrum from phonetics to syntax, as opposed to languages such as Norwegian. Trudgill's material, centred on Faroese, inevitably concentrates on morphophonemics and phonology, but there are also a host of syntactic and lexical issues of greater than average interest. Trudgill (esp. 1992:209) offers the caution that under modern conditions small isolated communities, such as the Faroese, are becoming harder to find in the modern world, and therefore languages such as Faroese will find it increasingly hard to emerge; see also the discussions in the literature cited above. Nettle (1999:108), suggests that 90% of the world's languages may disappear by the end of the present century and also points out that almost no new ones are being created and that very few may survive into the next century.²⁸

²⁷ And to a lesser extent the rest of Germanic, with German itself constituting a partial exception.

²⁸ Even if Indo-European languages do not spread all over the Americas over the next century, the surviving Native

Although most North American Indian languages are far from out of danger, it might be noted that there are far greater grounds for optimism for the survival of at least a few of them than those expressed by Goldwin Smith a little over a century ago, although Smith himself skirts such issues:

“The race . . . is doomed. It has fallen into the gulf between the hunter state and that of the husbandman . . . Ethnologists may find it instructive to study a race without a history and without a future; but the race will certainly not be a factor in New World civilisation. Musical Indian names places and rivers, Indian relics in museums, Indian phrases, such as “going on the warpath” and “burying the hatchet” - these and nothing more apparently will remain of the aboriginal man in North America” (Smith 1971:52).

Similarly, an examination of the populations of birds of prey in Wiltshire, England, in 1909 and 2002, show that almost vanished wildlife may stage a comeback. Hudson (1943:86–89) points out that by the turn of the last century the following species had been hunted almost to extinction there: the great bustard, giant crane, stone curlew, buzzard, and goshawk. Nearly a century later, however, most of those species have returned: “Now . . . there are more buzzards today on Salisbury Plain [Wiltshire - RAO] – and in the river valleys – than you could shake a stick at . . . The stone curlew has made a comeback too, up on the plain. A breeding programme to reintroduce the great bustard has met with reasonable success, going on to cite sightings of ospreys, hen harriers, goshawks, and red kites (Liddle 2003)”.²⁹ For the United States, Wisby 2004 reports that the bald eagles are nesting in the Chicago area, within the city limits, after an absence of over a century.

Parallel developments may be taking place with large carnivores in the US. Baron (2004:10–11, 233–40) points out that similar unplanned measures are leading to a revival in the ranges and numbers of cougars, bears, wolves, alligators, also almost driven to extinction in CC XIX and XX: the restriction of trapping, the abandonment of large areas by humans. He traces the recolonisation of several areas by cougars to more extensive ranges in Colorado, California, and Nevada, which has resulted in increasing numbers of attacks on humans, and their spread to areas from which they had been absent for a longer period: the Black Hills of South Dakota, Nebraska, Iowa, Missouri, and Minnesota, with reported sightings even further east (Baron 2004:235). This has led to cases where humans have been attacked and even eaten by cougars. He also makes a point pertinent to language revival (2004:239).

“Time does not run backward. We can bring the lions and wolves and bears back to America, and there are many good reasons to do so . . . but these great animals will not restore a mythic past, cannot erase the need for human intervention” (Baron 2004:239).

In this context the major rewilding proposed for the mid-West by the late Paul Martin (2005), involving an attempt to recreate the ecosystems existing before the Pleistocene

American languages are liable to be heavily Indo-Europeanized in vocabulary and structure, as indeed many already are (e.g., Michif). Alby (2001) points not just to the demographic come-back of the Kali'na but also to the heavy Gallicization of their language, cf. also Schmidt (cited in 2.2.).

²⁹ Nor is this revival confined to birds of prey: “[T]he otter . . . is staging a vigorous comeback, recolonising parts of the Thames Valley it abandoned generations ago (Fort 2003:219).”

megafauna extinction,³⁰ must be judged too ambitious – a linguistic equivalent would be a major revival of Latin, Gothic, Gaulish, etc., as spoken everyday languages.

7. CONCLUSION. Nowadays increased pessimism seems to be the order of the day regarding the wider field of HL and its subfields. To an alarming extent, much research in historical linguistics has to depend on pure chance, and often on data preserved in the nick of time, a topic that has become more urgent in recent years. About the best that we can do to impose some order is cite various overarching frameworks, including some from evolutionary biology, but many of these frameworks (e.g., Gould's conifer metaphor and Conway Morris' distinction between diversity and disparity) come with their own problems. The onrushing apocalypse seen by many scholars as facing both diversity and disparity in biology and human language suggests that much future research may indeed depend on some degree of chance. This attitude may sound overly defeatist, but at this stage it appears to be the best we can do

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³⁰ Following Martin's proposal, to take some examples (2005:207-11), introduced elephants would play the roles of mammoths and mastodons, and rhinoceroses that of giant ground sloths.

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INTERDISCIPLINARY DIRECTIONALITY IN NEUROLINGUISTIC MODELING

ADOLFO MARTÍN GARCÍA

*Consejo Nacional de Investigaciones Científicas y Técnicas (CONICET), Argentina
Universidad Nacional de Córdoba (UNC), Argentina*

Abstract: Contemporary neurolinguistics faces a lack of epistemological reflection on the methodological procedures whereby linguistic and neurological notions are correlated. To contribute to bridging this gap in the literature, this paper characterizes three directional approaches that have been followed to construct a neurolinguistic theory. In convergent modeling, some structural or functional similarities between a specific linguistic theory and a specific neuroscientific theory are first noticed, then confirmed or falsified, and finally refined. In *ab lingua* modeling, a linguistic theory is taken as a plausible starting point so that its constructs can be assessed for compatibility with a neuroscientific theory. In *a cerebro* modeling, the starting point is a theory of the brain, which is then used to accommodate a specific linguistic theory. The purpose of this paper is to define and analyze these three approaches with reference to contemporary examples of each.

Keywords: neurolinguistics, modeling, interdiscipline, directionality.

Languages: English, Japanese

IN HIS HIGHLY ACCLAIMED *Neurolinguistics and Linguistic Aphasiology*, David Caplan made the following observation about the neurolinguistics literature:

There is very little attempt to present and compare different frameworks in neurolinguistics, and existing introductions tend to present multiple analyses within a single framework [...] or to review a large number of approaches without critically comparing them [...] I do not think that we are yet in a position to choose definitely among the various theories in this field, and it is also likely that many approaches are complementary not contradictory. What seems to me to be possible and appropriate is to try to characterize the major theories, examine the data that have been used to support each and *the logic used to give this support*, identify strengths and weaknesses of each, and make some judgments as to which have been

productive and which seem to be reasonably justified (Caplan 1987: x, my emphasis).

Nearly 25 years have elapsed since those epistemological gaps were noticed. Since then, several neuroimaging techniques have been invented or improved, new laboratories have been set up the world over, and a number of neurolinguistics journals have been launched. Yet, Caplan's observation proves as relevant today as it did in 1987, especially as regards the lack of writings dealing with the logic used to construct neurolinguistic theories. In an attempt to partially bridge such an extant gap in the literature, the present paper seeks to identify and analyze three key modeling approaches used in contemporary neurolinguistic theories. Building on the views of Hécaen (1972), who defined neurolinguistics as a subset of neuropsychology, we shall conceive of linguistic and neuroscientific theories as subsets of linguistics (L) and neuroscience (N), respectively. So, a neurolinguistic theory can be seen as an *interset*, encompassing a specific theory of language and a specific theory of the brain.

Both L and N include multiple subsets (i.e., theories), the total number growing fast as both disciplines progress. Some easily identifiable subsets of L are Generative Grammar, Systemic-Functional Grammar, and Relational Network Theory, to name but a few. Within N, two clearly distinguishable subsets are Holism and Localizationism. Since a neurolinguistic theory can, in principle, be pursued by establishing correlations between any subset of L and any subset of N, a great number of different neurolinguistic theories, or *intersets*, can be postulated in neurolinguistics.

While not infinite from a synchronic perspective, the number of possible of *intersets* is certainly vast. At the moment, at least, there is no such thing as a monolithic neurolinguistic theory. As Obler & Gjerlow (1999:3) argue, “[n]eurolinguistics has yet to develop a single large-scale unified theory acceptable to all—or even most—neurolinguists, no doubt in large part because none of the fields which contribute to it has developed a single, agreed-upon model.” Indeed, as a result of the proliferation of diverging theoretical proposals within both L and N, neurolinguistics lacks a robust, uncontested fact base such as the one established in physics or chemistry.

In addition to the choice of specific subsets of L and N, there is another variable that determines the outcome of an exercise in neurolinguistic modeling, namely interdisciplinary directionality. A review of the neurolinguistics literature reveals three different modeling directions that can be followed, namely convergent, *ab lingua*, and *a cerebro* modeling. In convergent modeling, some structural or functional similarities are noticed between a linguistic theory (say, a subset L_1) and a neuroscientific theory (say, a subset N_1), so that a neurolinguistic theory is created by justifying and refining those initial apparent correspondences (cf. Lamb 1999). In *ab lingua* modeling, a linguistic theory (say, L_2) is taken as a plausible starting point so that its constructs can be assessed for compatibility with the neuroscientific theory or data of choice (say, N_2) (cf. Melrose 2005, 2006). In *a cerebro* modeling, the starting point is a subset of N (say, N_3), which is then used to neurologically explain a given subset of L (say, L_3) (cf. Pulvermüller 2002). In the following pages, an analysis will be offered of logic whereby these three approaches seek to justify correlations between linguistic and neurological constructs and data. The three approaches are represented in **Figure 1**.

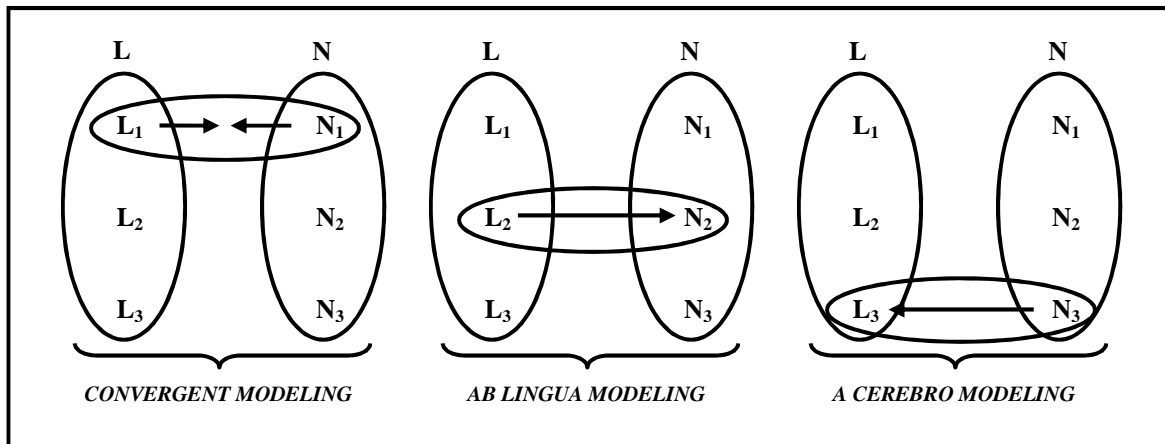


Figure 1. Convergent, ab lingua, and a cerebro modeling.

1. DIRECTIONAL APPROACHES IN NEUROLINGUISTICS. The three approaches presented can be termed directional approaches. They constitute specific interdisciplinary methodological strategies followed in choosing or collecting both linguistic and neurobiological data and justifying their mutual correspondence. In a directional approach, a group of constructs from either L or N are framed as either indispensable facts or as testable propositions while selected constructs from the other discipline are proposed as supporting or disconfirmatory evidence. At the macroscopic level, the aim is to establish which neural regions subserve specific language functions or systems. At the microscopic level, the goal is to provide principled explanations regarding how the logic underlying linguistic representations is processed by cell assemblies in the brain.

The selection of a given directional approach—or the unmediated adoption of one of them—is among the most important steps a neurolinguist takes in his theory-construction process. As a matter of fact, a theory's underlying directional approach will determine its level of biological plausibility, its potential of clinical application, and its susceptibility of computational implementation, to name but a few aspects. Thus, defining the different directional approaches used in the field and assessing their methodological implications are two significant endeavors for anyone interested in the neurological aspects of language.

2. COINCIDENCES BETWEEN BRAIN AND LANGUAGE: CONVERGENT MODELING. First, we shall consider convergent modeling. By following this directional approach, the neurolinguist notices some preliminary structural or functional similarities between a subset L₁ and a subset N₁ and provides the arguments and collects the data which support the view that certain aspects of L₁ are directly implemented by certain aspects of N₁. Convergent modeling is thus a bidirectional approach: instead of imposing the logic of L₁ on N₁ or vice versa, as is the case with the following two approaches, it emphasizes conceptual correspondences between a specific conception of the linguistic system and a specific conception of the brain.

An early instance of convergent modeling can be found in the work of Geschwind (1965). A self-proclaimed connectionist, Geschwind observed that the linguistic ability to

name objects involves the integration of multimodal semantic representations (viz., visual, somatosensory, and auditory sememes). At the same time, he pointed out that the inferior parietal lobule is endowed with exclusively human properties, among which he highlights the capacity to integrate electrochemical flows coming from the cortical relay areas processing visual, somatosensory, and auditory input. His conclusion, anchored in the convergent analysis of *both* linguistic *and* neurological data, is that the human ability to name objects is subserved by the inferior parietal lobule.

Geschwind's reasoning constitutes a valuable example of convergent modeling, but the most elaborated application of this directional approach corresponds to Sydney Lamb,¹ who was in fact deeply influenced by Geschwind. Lamb's L_1 is Relational Network Theory (cf. Lamb 1966, 1999), and his N_1 is an updated version of Wernicke-Geschwind Connectionism (cf. Geschwind 1964, 1965). For Lamb, the linguistic system proper is purely relational (i.e., it contains no objects or symbols), and the relationships that make it up are notationally represented by lines and different types of nodes. The nodes and the relationships of the notation system possess a number of well-defined properties which Lamb correlates directly to well-established properties of neurons and cortical columns (see **Table 1**). The ensuing interset can be called Lambian Neurocognitive Linguistics.

Lambian Neurocognitive Linguistics constitutes a case of convergent modeling precisely because the quest for the neurological implementation of Lamb's L_1 starts upon the observation that nodes in Relational Network Theory are structurally isomorphic and functionally similar to neurons in the human brain (cf. Lamb 2004: 42), let alone the correspondence between the strictly relational conception of language posited by Relational Network Theory and the preeminently relational nature of the human neural tissue and its processes. **Figure 2** gives an indication of some of the isomorphisms, similarities, and correspondences in question.

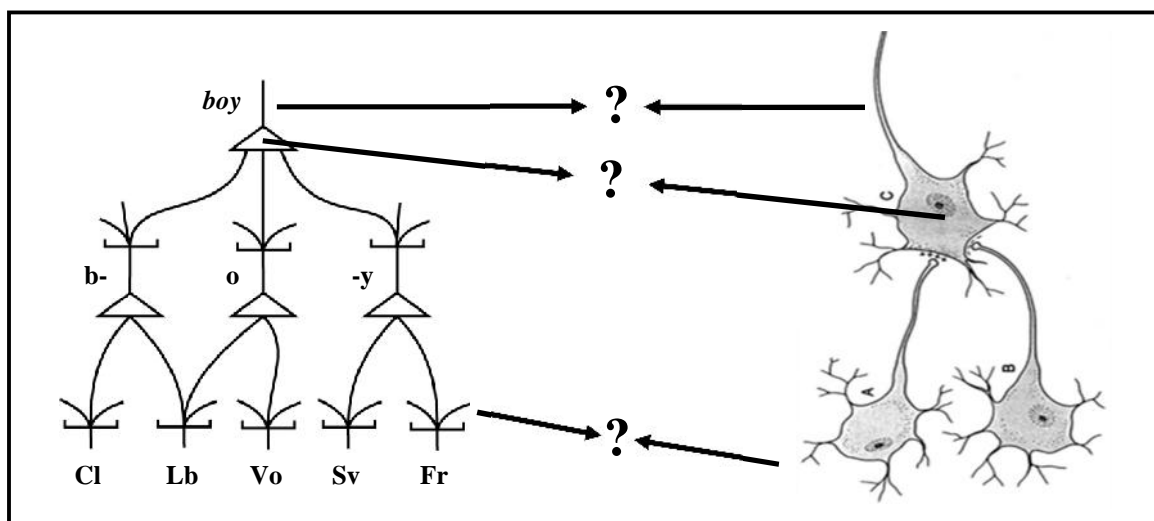


Figure 2. Preliminary isomorphisms between relational networks and neurons.

¹ However, it must be noted that his initial view of language, as originally formulated in Stratificational Grammar (Lamb 1966), was not neurologically motivated.

Roughly forty years ago, the initial correlational hypothesis considered by Lamb was that the abstract nodes of Relational Network Theory could be neurologically implemented by individual neurons. However, such a hypothesis has been refuted by Lamb himself (1999: 323–24), among other reasons, because individual neurons are not only noisy and unreliable, but also because their processing capacity is lesser than that of relational network nodes (cf. Barlow 1972).² The alternative hypothesis presently entertained is that a nection (i.e., a relational module composed of two nodes linked by a single internal line) is biologically implemented as a cortical minicolumn (a bundle of 75–110 neurons aligned vertically throughout the gray matter working as a single functional unit within the neocortex) (cf. Mountcastle 1998; Burnod 1990; Arbib, Érdi & Szentágothai 1998). Each minicolumn is roughly 2–4 mm in length and 30–40 μm (microns) in diameter. Approximately 70% of all neurons in a minicolumn have excitatory connections, while the remaining 30% have inhibitory connections. Thus, every minicolumn is capable of sending both excitatory and inhibitory connections.

Several studies conducted with monkeys and cats have shown that these species' primary visual, somatosensory, and auditory cortices consist of hierarchically organized layers of cortical columns (Hubel & Wiesel 1962, 1977; Mountcastle 1998). Since the cortices of cats and monkeys are remarkably similar to those of human beings, scientists take the neurological evidence found in such species as relevant data for understanding the human brain. The current consensus is that the human cortex is also a massive system of hierarchically organized cortical columns. On the basis of the correspondence proposed between nections and cortical columns, a number of specific properties of L_1 and N_1 are claimed to converge. **Table 1** lists some such convergences by way of example.

² However, in their experimental studies with epileptic patients, Quiñ Quiroga *et al.* (2005) have shown that *a single neuron* can in fact selectively respond to stimuli as specific as pictures of American actress Jennifer Aniston, NBA legend Michael Jordan, or the Tower of Pisa, in Italy.

RNT Postulate (L_1)	Hypothesized Neurological Correlate (N_1)
(i) The individual linguistic system is a network of relationships.	The human cerebral cortex is a network of more than 10 billion neurons.
(ii) Nections are the minimal processing units in relational networks.	The cortical minicolumn is “the minimal processing unit in the neocortex” (Mountcastle 1998: 165).
(iii) Nections (and individual nodes) can both integrate input signals from other nodes and distribute their output signals among other nodes.	Cortical links “are characterized by great <i>divergence</i> : Each neuron reaches thousands of others and each area reaches tens of its sister areas. They are also characterized by great <i>convergence</i> ; that is, each neuron receives input from multiple other neurons, and each area receives input from several other ones” (Pulvermüller 2002: 21).
(iv) Connections have varying strengths.	Biochemical and even structural changes in neurons modify the strength of that neuron’s synaptic connections (Kandel 1991).
(v) Connections are of two types: excitatory and inhibitory.	The cortex comprises several types of neurons, the main difference between them being the type of connections they have to other neurons. For example, pyramidal and spiny stellate neurons have excitatory connections, whereas large basket neurons, columnar basket neurons, double-bouquet neurons and chandelier neurons, among others, have inhibitory connections (Abeles 1991).

Table 1. *Some interdisciplinary convergences in Lambian Neurocognitive Linguistics.*

The correspondences listed in **Table 1** illustrate the essence of convergent modeling, and show how this directional approach can lead to an interset made up of explicit, isomorphic correlations between an L_1 and an N_1 .

3. FROM LANGUAGE TO BRAIN: *AB LINGUA* MODELING. In *ab lingua* modeling, the neurolinguist first takes the constructs of a linguistic theory as a plausible point of departure and then proceeds to find confirmatory neuroscientific evidence in favor of their neurological plausibility, such constructs being neither isomorphic nor functionally similar

to those of the neurological theory of choice. In other words, *ab lingua* modeling involves assuming that the brain circuits subserving language must be structured and functionally organized as predicted by the linguistic theory at hand. *Ab lingua* modeling is a unidirectional approach, as it involves justifying neurolinguistic correlations in an interset going *from* a subset of L (say, L₂) *to* a subset of N (say, N₂), in the absence of any apparent structural or functional similarities between the constructs included in each subset.

A recent exercise in *ab lingua* modeling can be found in the neurolinguistic explorations of Melrose (2005, 2006). Melrose takes a number of constructs from Systemic-Functional Linguistics (SFL) as his starting point and then proceeds to interpret certain neuroscientific data as confirmation of the neurological reality of such constructs. In his own words, his aim is “to move SFL not so much in the direction of cognitive psychology as in the direction of neurological models of language processing, in the hope that neurological models can provide a firmer foundation to SFL” (Melrose 2005:402). Specifically, having reviewed the notion of transitivity (or ideation base) as advanced by Halliday & Matthiessen (1999), along with its associated notions of processes, participants, and circumstances, Melrose (2005) interprets the findings and views of Gallese (2003) regarding motor, canonical, and mirror neurons as evidence that certain neural networks in the ventral premotor cortex are the foundation of transitivity. He even goes as far as proposing specific substrates for the different types of processes distinguished in SFL. In this sense, he presents some neurological evidence which he interprets as an indication that (i) at least some material processes would be processed in Brodmann Areas (BAs) 10, 11 and 19; (ii) some mental processes would be subserved by BAs 21, 22, and 37; and (iii) some relational processes would be processed in BAs 9, 44, and 46. Relying on *ab lingua* modeling, Melrose (2005:409) concludes that “[i]t is apparent from this research that the different options in the transitivity system are neurally ‘real.’”

Ab lingua modeling has also been the approach of choice of several neurolinguists working within a generative framework. Their goal is to prove that the constructs of generative models have neurological existence. For example, subscribing to the Minimalist Program (Chomsky 1995), Hagiwara (2006:298) states that “one approach that linguistics can take at the moment is to hypothesize that each mental operation posited by linguistic theory corresponds to a computation carried out by the brain.” The author presents a minimalist model of syntax as a plausible characterization of an individual’s language faculty and claims that the Evoked Response Potential (ERP) technique can be used “to see whether or not theoretical constructs and/or distinctions posited in syntactic theory have neurophysiological reality” (Hagiwara 2006:303). Hagiwara then proceeds to compile the results of several ERP studies on syntactic processing (mainly in Japanese) to investigate the neural correlates of movement operations. For instance, he reports experiments done to test and compare the processing of complex sentences with unmarked word order (e.g., *Shacho-wa [hisho-ga bengoshi-o sagasiteiru-to] itta*, meaning ‘The president said that the secretary was looking for the lawyer’) and scrambled sentences in which an embedded object was moved to sentence-initial position (e.g., Ueno and Kluender 2003). As compared to unmarked sentences, scrambled sentences tend to elicit a sustained left-anterior negativity over consecutive noun phrases and a P600 at the noun phrase of the pre-gap position, which, for Hagiwara, reflects syntactic working memory and structural integration difficulties, respectively. In a clear case of *ab lingua* modeling, Hagiwara (2006:305)

concludes that the evidence presented “corroborates the electrophysiological reality of movement operations and eventually the theoretical construct of ‘Move’ in the Minimalist Program.”

All in all, *ab lingua* modeling implies assuming that the constructs of a subset L_2 are accurate representations of the linguistic system, and that these constructs, though deprived of any apparent structural or functional resemblance to neurological architecture or processes, are actually biologically implemented in N_2 exactly as postulated within L_2 .

4. FROM BRAIN TO LANGUAGE: A *CEREBRO* MODELING. In a way, a *cerebro* modeling is the mirror image of *ab lingua* modeling. It could be defined as the directional approach by virtue of which the neurolinguist frames either a neuroscientific theory or a collection of neuroscientific data (say, N_3) as a starting point for research and then tries to interpret a given subset of L (say, L_3) in terms of his/her initial neurological constructs. A *cerebro* modeling is hence a unidirectional approach, in that the justification of interdisciplinary correlations within the emerging interset proceeds *from* N_3 *to* L_3 , there being no obvious structural or functional similarities between the constructs included in each subset. In this case, a commitment is made to the theoretical prevalence of N_3 over L_3 .

One of the earliest exercises of a *cerebro* modeling can be found in the work of John Hughlings Jackson (1878). A groundbreaking neurologist, Jackson advanced the notion that the human nervous system is a complex hierarchical structure whose higher levels are responsible for the chronic inhibition and timed activation of the lower levels. He then set out to develop a theory of language architecture, use, and breakdown whose main prerequisite was that it be consistent with his hierarchical conception of the nervous system. This is a clear case of a *cerebro* modeling because, as Caplan (1987:22) explains, “[in Jackson’s theory] an analysis of the function of the nervous system in other areas leads to a hypothesis about what language is and how the brain processes it.”

A couple of decades ago, Yves Burnod (1990) set forth a neurolinguistic theory which also relied on a *cerebro* modeling. Burnod’s goal was to use neurobiological principles directly to explain different aspects of human cognition, language included. Having discussed his conception of cortical organization in depth, he considers that there is no need to postulate additional mechanisms to explain language. For Burnod, his characterization of cortical structures is by itself sufficient to account for the physical bases of linguistic units, as well as for their combination into phonemes, words, and sentences. In conducting research within Burnod’s framework, one could propose different linguistic descriptions of syntactic patterns, for instance; but one could not relinquish the conception of the brain as a hierarchically arranged adaptive network of neurons with well-defined properties (e.g., two types of excitatory inputs at neuronal level, the autonomy of cortical columns to process representations, the postulation of call trees to explain cortical flexibility and adaptability).

Nowadays, the most widespread neurolinguistic theory based on a *cerebro* modeling is arguably Friedemann Pulvermüller’s Theory of Functional Webs. In *The Neuroscience of Language*, Pulvermüller (2002:9) seeks to “specify the putative organic basis of language use and language comprehension in terms of neurons, neuronal connections, and neuron circuits,” focusing on the processing of lexical units and basic syntactic patterns. To this end, he propounds his own neurological theory (Functional Web Theory) and then uses its constructs to provide a neurological account of Phrase-Structure Grammar.

Pulvermüller begins his exploration by establishing several principles of cortical structure and function, which he regards as “universal neuroanatomical and neurophysiological properties of the cortex” (Pulvermüller 2002:21). For example, he affirms that adjacent neurons are heavily connected, thus forming local clusters; that adjacent areas have a probability of over 70% of being connected, while the chances of distant areas to be connected range between 15 and 30%; that connections between areas are mostly reciprocal; and that just as the simultaneous firing of neurons strengthens their mutual connections, so does the independent firing of a neuron weaken its connections to inactive cells.

These principles lie at the heart of his modeling starting point (N_3) and, given the current state of the art, are assumed to constitute an unequivocal fact-base to guide research. Relying on those principles, Pulvermüller (2002) defines the crucial neurological construct for his interset, that is, the concept of functional web: a widely-distributed functional microsystem of nerve cells which features a well-defined topography and whose dynamics can be characterized in terms of four activity states, namely, rest, ignition, priming, and reverberation. Rest refers to the lack of electrochemical activity in a web; ignition is the state attained by a web receiving sufficient activation to fire it; priming is the effect whereby a web receives a small amount of activation as a result of its connections to other fully active webs; and reverberation refers to the state in which a web retains its internal activity for a few seconds.

Thereupon, he posits that the human brain contains a discrete functional web as the physical substrate of each word and syntactic pattern (sequence set) in a natural language. Ultimately, he uses the neurophysiological constructs of his N_1 to explain certain aspects of lexical relations (e.g., synonymy and homonymy) and the serial ordering of words (e.g., center-embedding). Let us consider **Figure 3** (adapted from Pulvermüller 2002: 216–217) as an illustration of this approach.

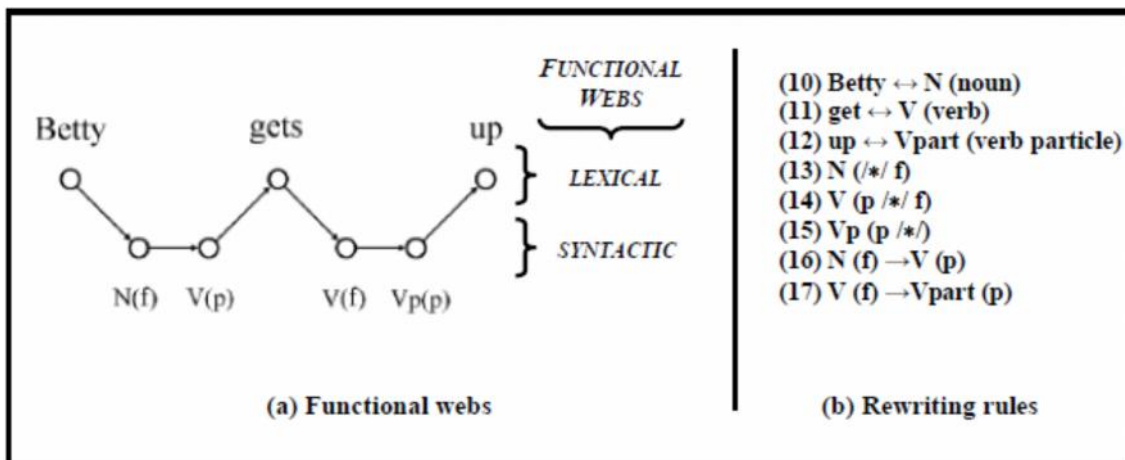


Figure 3. A simple functional network and a set of rewriting rules it can implement.

Having justified the neurological plausibility of the functional webs (more precisely, the word webs and the sequence sets) diagrammed in **Figure 3(a)**, Pulvermüller argues that the neurophysiological properties thus depicted can implement the grammatical description offered by the rewrite rules of **Figure 3(b)**.³ The nodes in his functional web are activated in a timely fashion, going from one activity state (e.g., rest) to another (e.g., ignition) as new inputs are processed by the network. Furthermore, he is explicit about the correlations that constitute the intersets he created. In his own words,

[t]here is correspondence between parts of the circuit and formulas (10)–(17). The relevant input units are defined with regard to their respective category labels by assignment formulas (10)–(12). Valence formulas (13)–(15) list the connection of each input unit to backward- and forward-looking sequencing units, and sequence formulas (16) and (17) have their network counterpart in the two horizontal arrows connecting two adjacent pairs of sequence sets (Pulvermüller 2002:217).

In short, the essence of a *cerebro* modeling is to assume that the constructs of a subset N_3 correctly characterize the brain (or some of its properties), so as to then impose the structural and functional features of N_3 on a disembodied description of linguistic representations and patterns.

5. CONCLUSION. This paper has distinguished three directional approaches used in contemporary neurolinguistic modeling, each involving a different logic and epistemological commitment. The distinction proposed is relevant because the choice of one directional approach or the other impinges upon the level of biological plausibility, the potential of application, and, ultimately, the success of the ensuing neurolinguistic theory.

The most popular directional approach in the field is probably *ab lingua* modeling. In addition to the authors mentioned in section 3, several other researchers have used it in their empirical studies and theoretical papers (e.g., Paradis & Lebrun 1983; Grodzinsky 2000; Paradis 2001; Bornkessel & Schlesewsky 2006). As some such publications show, *ab lingua* modeling can yield valuable results at a macroscopic level, for it can guide research aimed at determining the overall organization of large linguistic subsystems in the brain. For example, Paradis (2001) relies on *ab lingua* modeling to reject three architectural models of the bilingual's linguistic system. Paradis has sequentially considered the extended system hypothesis (cf. Kolers 1968), the dual system hypothesis (cf. Kolers 1968), and the tripartite system hypothesis (Paradis 1977), contrasting them with aphasiological evidence. His review of cases of bilingual aphasia leads him to the conclusion that none of these hypotheses is neurologically plausible, as they cannot account for all the recovery patterns documented in the field of bilingual aphasia. As an alternative, he supports the subsystems hypothesis (e.g., Paradis 1981), which seems capable of explaining all pathological and non-pathological data documented so far in the relevant

³ See Pulvermüller (2002:217-218) for a full account of the time course of activation and deactivation of the word webs and sequence sets in **Figure 3(a)**, including a description of the changes in activity states of each web. A simulation of the dynamics of the network can be found in Basic bits of neuronal grammar at <http://www.cambridge.org/us/features/pulvermuller/>.

literature. In short, *ab lingua* modeling is a useful approach to refute and validate large-scale architectural models.

However, chances are that *ab lingua* modeling will never result in the identification of the neurological structures subserving fine-grained distinctions in linguistic processing. The quest for the neurological bases of generative constructs points in this direction. In fact, several authors have used *ab lingua* modeling to demonstrate the neural implausibility of generative grammar. For example, García (2010) shows that several generative principles, such as the theses of objectivism, syntactocentrism, and non-redundancy, are incompatible with neurological evidence. Poeppel & Embick (2005) criticize the tendency in generative grammar to consider syntactic computations as not occurring in real time, arguing that this unprincipled dictum broadens the gap between linguistics and neuroscience. For their own part, Christiansen & Chater (2008) provide compelling multidisciplinary evidence indicating that the very construct of Universal Grammar is phylogenetically implausible, as neither adaptationist nor non-adaptationist accounts can explain how such an abstract, idiosyncratic module may have emerged in the evolution of the human brain.

On the other hand, *a cerebro* modeling is superior to *ab lingua* modeling in terms of neurological plausibility, as it pays more attention to the physical basis of the system, especially at the microscopic level. Paradoxically, such concern with the minute details of cellular structure and functioning also means that correlations with linguistic representations must remain greatly speculative, as there is currently no firm theory of how different types of neurons, synapses, neurotransmitters, and neuroreceptors participate in the processing of different linguistic units, e.g., phonemes, morphemes, words, etc. Moreover, the complexity of the neural tissue is so overwhelming, and our theories of it so simplified, that the number of linguistic subsets that could be proposed as viable correlates of a given neurological construct is potentially infinite. Thus, the objectivity of this approach is considerably less than it might seem at first glance. However, *a cerebro* modeling has proven useful for clinical and therapeutic purposes. In fact, Pulvermüller's Functional Web Theory has paved the way for an innovative method for the therapy of aphasia in chronic stroke patients called constraint-induced aphasia therapy (CIAT) (Pulvermüller *et al.* 2001).⁴

Finally, convergent modeling, depending on how it is carried out, might share some of the benefits and shortcomings of both previous approaches. One of the main merits of convergent modeling probably lies in the fact that it can lead to a process of bidirectional interdisciplinary refinement. Once principled correspondences are established between an L_1 and an N_1 , it may be possible for any developments in one subset to shed light on certain aspects of the other subset. Of course, not every linguistic theory can be used in convergent modeling. If the constructs of a theory L_1 do not present any isomorphisms or functional similarities to those of a specific N_1 , there is no possibility of adopting this directional approach. That is why Lambian Neurocognitive Linguistics stands out as a unique neurolinguistic model: few linguistic theories include constructs that resemble the basics of neuronal architecture and function, as does Relational Network Theory.

⁴ For further details on the CIAT method, see <http://www.mrc-cbu.cam.ac.uk/research/speech-language/aphasiatherapydetails.html>.

Indeed, Lambian Neurocognitive Linguistics is particularly worthy of attention because the ontological foundations of its L_1 (Relational Network Theory) differ qualitatively from those of most linguistic theories used in other directional approaches. To address this point, let us draw a distinction between four dimensions relevant to our understanding of language, namely: (a) the neural dimension, concerned with the study of the **cerebral substrates** of language; (b) the cognitive dimension, dealing with the **abstract system** of ephemeral mental images internally produced by the brain; (c) the physiological/physical dimension, encompassing the actual **productions** of the system, i.e., sounds waves in speech, graphic inscriptions in writing, hand gestures in sign languages; and (d) the analytical dimension, in which the linguist creates **descriptive** or **explanatory constructs** (i.e., symbolic objects) by noticing recurring partial similarities among the physical productions perceived in oral, written, or hand-signed texts.

Most neurolinguistic theories seek principles of correspondence between dimensions (d) and (a), or vice versa. This is true of most theories created via *ab lingua* and *a cerebro* modeling. In fact, all of the linguistic theories in the intersets surveyed above—Systemic-Functional Grammar in Melrose's case, the Minimalist Program in Hagiwara's case, and Phrase-Structure Grammar in Pulvermüller's case—characterize language as a system of symbolic objects. However, as Lamb (1999) argues, the view that the neurological linguistic system (a) may consist of symbolic objects (d) is unrealistic. By definition, a symbolic object is not capable of interpreting itself; rather, it is a sign that can be interpreted by an external processor. The symbolic objects devised by linguists in dimension (d) can be interpreted by any qualified observer. Yet, the idea that such objects exist in the brain as analytically defined in a linguistic theory implies that the human cortex contains some structure or entity in charge of interpreting them—maybe a homunculus of sorts. Of course, if we accepted the possibility that there might be such an entity within our brains, we should then postulate another similar entity residing inside the first one, and so on, *ad infinitum*. It is hardly profitable to uphold a neurolinguistic theory that entails the presence of recursive homunculi in our brains.

Even researchers who conceive of language as a symbolic means of communication ultimately recognize that symbols have no neurological existence as such. For instance, Deacon (1997) argues that what distinguishes humans from other species is the ability to communicate symbolically, showing that while animal communication is based exclusively on iconic and indexical reference, human language is characterized by its reliance on symbolic reference (cf. Peirce 1955 [1897, 1903]). Nevertheless, in answering the question of what are the actual substrates of symbolic units in the brain, Deacon (1997:300, my emphasis) maintains that “[t]he answer appears to be that individual linguistic symbols are not exactly located anywhere, or rather that the brain *structures necessary for their analysis* seem to be distributed across many areas.”

The reason why Relational Network Theory appears to correspond so directly with neural structures and processes is that it does away with symbols altogether and instead proposes a view of language that is entirely relational. The nodes and lines in the notation system describe the actual **cognitive system that analyzes** (produces, comprehends, learns) information about external symbols. Relational Network Theory, then, is a plausible characterization of dimension (b), which, abstract though it is, proves considerably less

removed from (a) than the analytical constructs posited by most linguistic theories. That is perhaps why Relational Network Theory lends itself so fruitfully to convergent modeling.

To conclude, it is true that other neurolinguistic theories and studies not discussed presently may not fit neatly into any of the three directional approaches presented. Yet, it is safe to say that all neurolinguistic theories are, at the very least, mainly governed by a specific directional approach. Thus, acknowledging the difference among convergent, *ab lingua*, and *a cerebro* modeling is an important step in discovering the overall logic underlying a given neurolinguistic theory, identifying its merits, and becoming aware of its limitations.

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UNINTENDED BLENDS AND THE STRATIFICATION OF LANGUAGE

SARAH TSIANG

Eastern Kentucky University

WILLIAM J. SULLIVAN

Uniwersytet im. Marii Curie-Skłodowskiej

Abstract: Unintended blends are speech errors providing further evidence for considering the linguistic systems of English and Polish as relational networks with five strata between cognition and sound (semology, syntax, morphology, phonology, and hypophonology). A central tactic pattern defines and relates the emes (basic elements) of each stratum while realizational relations link the emes of adjoining strata. Timing errors have been shown to appear at the interface between an unordered upper stratum and a linearized lower stratum. Tactic pattern errors resulting in the misplacement of emes for the intended meaning have been shown to originate in each of the five strata. Unintended blends show substantial evidence for four strata, while a single example pertains to the hypophonology. Examples from English and Polish provide the raw material for the analysis, which explains unintended blends as a result of spreading activation through a relational network system where processing includes random pauses.

Keywords: speech errors, blends, timing errors, tactic pattern errors, relational network theory, strata

Languages: English, Polish

UNINTENDED BLENDS are accidental nonce productions that parallel intentional blends like *motel* < *motor* + *hotel* in English or *schodnik* ‘ramp’ < *schody* ‘stairs’ + *chodnik* ‘sidewalk’ observed on a sign on a Polish church in Ansonia, CT (actually the Polish spoken in US Polonia). *Motel* is a phonological blend. The onset of the first syllable of *motor* is the onset of the first syllable of the blend. The final of the second syllable of *hotel* is the final of the second syllable of the blend. The peak of the first syllable and the onset of the second syllable are from both blended lexemes. *Motel* has become a recognized lexeme. Conversely, *schodnik* is a morphological blend. The *s* is a prefix morpheme from *schody*. The *nik* is an agentive-instrumental deverbative suffix from

chodnik. The root *chod*, most frequently met in the verb *chodzi* ‘walk’, is common to both blended lexemes. *Schodnik* has not become an accepted lexeme.¹

Unintended blends in our large and growing corpus of errors include sememic blends (*in the ten days following the election were very disheartening*, presumably blending *in the ten days following the election we were very disheartened* with *the ten days following the election were very disheartening*) and syntactic blends (*we shouldn’t shun away from it*, presumably blending *shun it* and *turn away from it*) in addition to morphemic blends like *wartałoby* < *byłoby warto* ‘it would’ve been important’ or *conferences* < *constant references* and phonological blends like *handcates* < *handcuffed inmates* or *piszła* < *piłka przeszła* ‘the ball passed’. Data gathering continues.

1. BACKGROUND. We have studied two types of speech errors in English and Polish in recent work. The first is timing errors (anticipation, perseveration, and spoonerisms), which appear as a result of timing asynchrony in the interstratal processing between an unordered upper stratum and the linear sequencing provided in the next lower stratum: e.g., *commission of the permittee* instead of *permission of the committee* or *walczy ta ca* instead of *ta czy walca* ‘dance a waltz’ (cf. Sullivan 2011, Sullivan and Tsang in press). Organizational errors appear in a single tactic pattern (TP errors). TP errors appear when all emes that should be present and sequenced are indeed present and every eme is in a position appropriate to the class that eme belongs to, but at least one is in a position that is not the one corresponding to its position in the lexeme or phrase being encoded, for example *starta* ‘start’ in place of *strata* ‘loss’.

We have shown that both timing and TP errors support a relational network linguistic system operated by loosely-yoked spreading activation through a network with five strata (for English and Polish), each providing some of the sequencing needed to explain the linear nature of the output. When combined with random rest periods at different strata, this mode of operation predicts timing speech errors if asynchronies appear in the rest periods. We now turn to a third type of speech error, unintended blends. These are not purely (cognitive) semantic blends of the sort described by Turner and Fauconnier 2002 and other cognitive grammarians, which are intentional and prior to encoding. Rather, they are blends that arise during the spreading-activation processing of the linguistic system, again assuming that the strata are not in continual processing mode. That is, a particular tactic pattern may take a rest period at random while other strata continue processing. Timing errors result from problems of coordination between rest periods. TP errors do not require the assumption of rest periods, but rest periods appear to play a role in unintended blends. That is, a lower stratum, instead of incorporating everything sent down from an upper stratum during the rest period but in the wrong order, as with spoonerisms, leaves out material sent down from the upper stratum. As a result, we find that unintended blends also provide strong support for the relational network system of **Figure 1** and the processing mode proposed in Dell & Reich 1977.

¹ Since the institution of EU rules concerning the disabled, Polish businesses have constructed ramps leading up to their doors. The lexeme for ramp is now *podjazd*. It is easy to see why if we remember that *schodnik* is built on the root for ‘walk’ and so means ‘walk-ramp’, whereas *podjazd* is built on the root for ‘ride’ and so means ‘ride-ramp’. Since the disabled are expected to be in wheelchairs, the choice is clear.

2. THE NEUROCOGNITIVE STRATIFICATIONAL MODEL. An outline model of the linguistic system we work with is presented in **Figure 1**. It has 5 strata connecting the cognitive store with sound. Each stratum has a central tactic pattern which defines the basic elements at that level of the system (the dotted ovals). Each TP has relations to the two adjacent TPs (or to the cogstore or sound), as represented by the vertical arrows. So, the vertical arrows indicate relations between the basic elements of each stratum. Each TP may have relations directly to the cogstore (the horizontal arrows), but during the encoding/decoding of messages, most input to the linguistic system is via the semology.

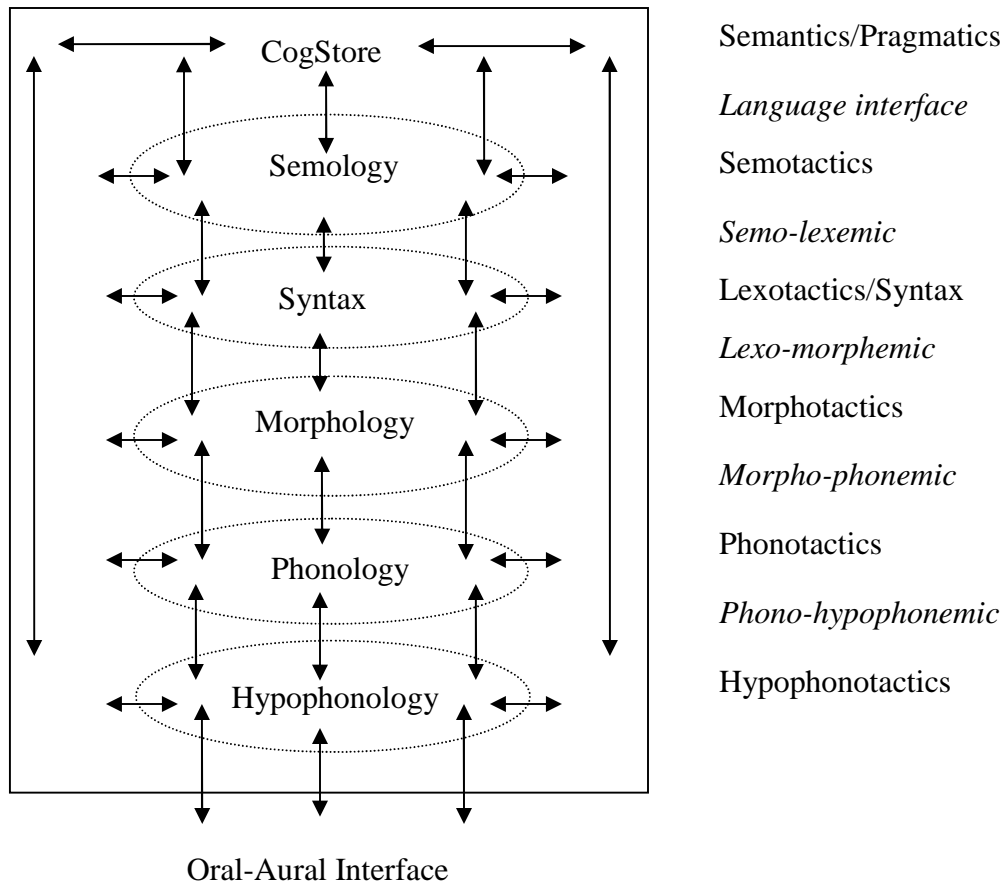


Figure 1. Outline of the linguistic system, relative to the cognitive store.

The semology handles relations like discourse structure, Given-New information balance, participants and their role relations to acts, the identification of thematic participants, focus, etc. The rest of the strata are more or less parallel to what is traditionally understood, albeit from a RN, completely non-generative viewpoint. The labels to the right in standard typeface name each stratum and the interstratal relational networks are named in italics. This is the basic system, represented as a static model.²

² NB: The four outermost arrows at top and sides are intended to indicate the scope of the cognitive store.

In operation, input from the cogstore is encoded into sound via activation spreading through the network. The cogstore starts activation input to the semology, and the semotactics starts processing it, identifies sememes, groups them into predications, and provides linear sequence to the predications. Soon after the semotactics starts processing, activation starts spreading to the syntax, which starts processing this input, defining lexemes and providing linear sequence between lexemes within clauses, which realize predications. Soon after the syntax starts processing, activation starts spreading to the morphology, which starts processing its input in parallel fashion. And so on through the system, with each TP providing some of the linearization to the output.

The activation spreads through the system, and the strata process in loose parallel. If processing carries on uninterrupted, we explain the appearance of linear order in the speech chain and the rate at which we speak, without errors.

Now suppose that a TP can take a rest period while the TP immediately above it continues processing. Imagine an example where this occurs between the syntax or lexotactics and the morphotactics. The morphotactics takes a short rest, starting in the middle of processing a dimorphemic lexeme, specifically at the point where one morpheme of that lexeme has been processed and activation is being sent to the phonology. The morphotactics resumes processing when the syntax is in the middle of processing another dimorphemic lexeme. But instead of picking up where it left off, with the first lexeme, the morphotactics picks up right where the lexotactics is at that moment. The result is an unintended blend with the first morpheme of one lexeme and the second morpheme of the other lexeme.

It may be useful to see how we understand the production of an unintended blend.³

3. A FORMAL PROSECUTOR. Consider **Figure 2**. Note the glosses in Polish. This is intended to signify that a lexeme like *poprzedni* ‘former’ **is related to** the two morphemes labeled *form* and *er*, rather than giving the impression that the lexeme *former* is constructed of the two morphemes *form* and *er*. The syntax has linearized three lexemes in the phrase *poprzedni federalny prokurator* ‘former federal prosecutor’. What came out was [a] *formal prosecutor*. We ignore the article and *prokurator* ‘prosecutor’ in what follows. *Poprzedni* is active first, followed shortly thereafter by *federalny*. *Poprzedni* is related to the morphemes *form* and *er* simultaneously. The northwest lines on those two diamonds are active. For them to be sent to the phonotactics (PT) for processing into syllables, they must get activation from the morphotactic (MT) side. The line from Adj in the MT must sequence roots before suffixes. When Adj is activated on the first pass, it sends activation to both *form* and *feder*. But only *form* is activated from the northwest and it is sent to the PT. Next the suffix line is activated, and activation is sent to both *er* and *al*. But only *er* has been activated by *poprzedni*, so it soon follows *form*. Another adjective is encoded by the syntax, so Adj cycles and reactivates the AND node leading to root and suffix. Again the MT sends activation to both *form* and *feder*, but this time the latter has been activated by the syntax and it is sent to the PT, followed by *al*, now activated by both a signal via *federalny* and a signal via suffix in the MT.

Now suppose that the MT takes a rest just after activation through the root OR node has sent *form* to the PT. Then *federalny* becomes activated and sends signals to *feder* and

³ We envision the logic of decoding a message from sound roughly as the inverse, as it involves the delinearization of the linear speech/writing chain.

al. Meanwhile, the signal from *poprzedni* to *er* begins to fade. When Adj finishes its rest, it still needs to finish processing the suffix OR. Suffix sends activation to both *er* and *al*, but *al* is more strongly activated and its activation is passed to the PT. The MT output is *form al*, which the PT processes into two syllables: *for mal*. The northwest activation of *er* has faded and the activation of *feder* fades for lack of a suffix. Remember that all of this takes place in a tiny fraction of a second, i.e., in much less time than it takes to tell. It takes place in too little time for the speaker to correct the mistake before it's too late.

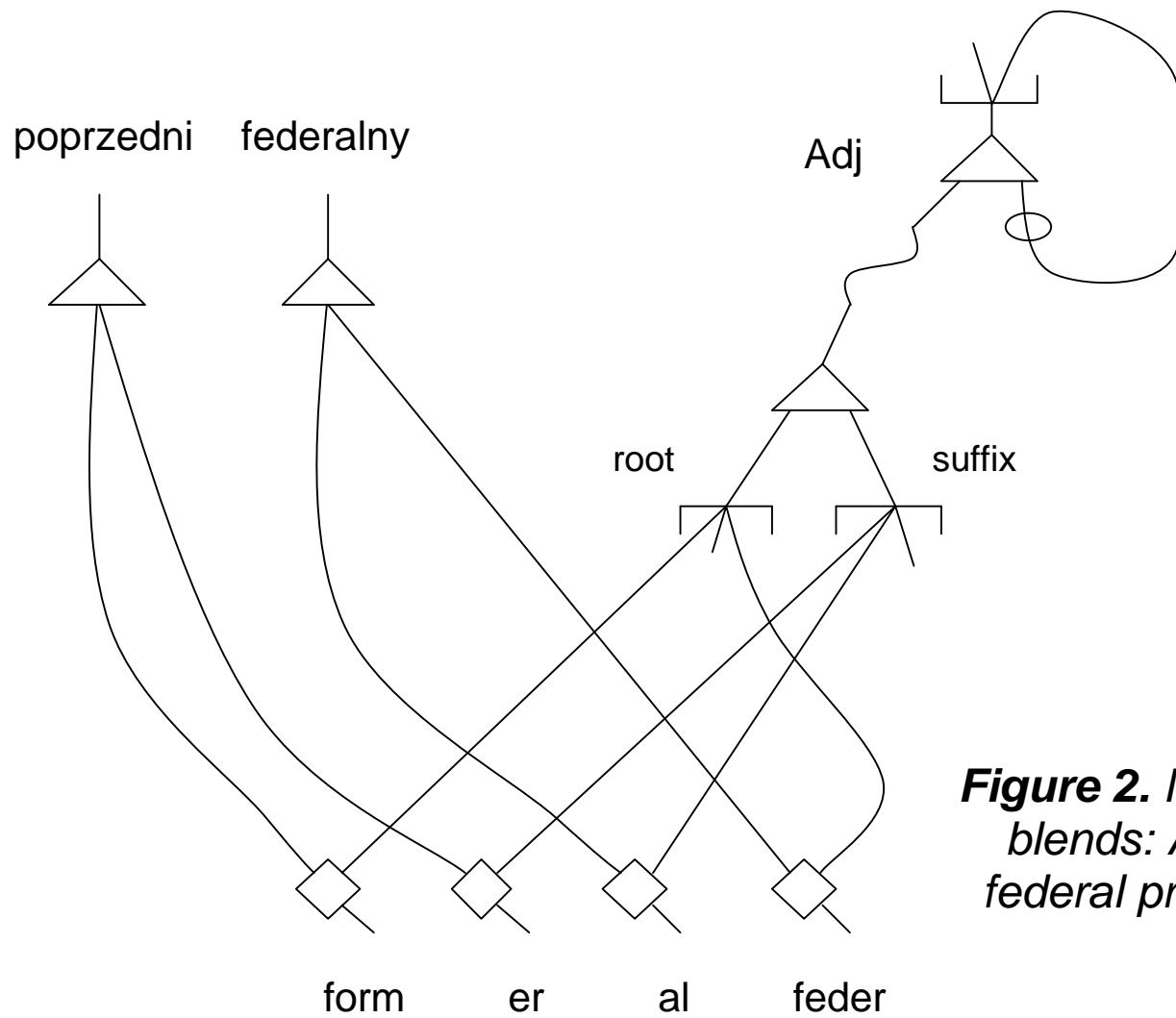


Figure 2. Morphemic blends: A former federal prosecutor.

Having outlined what we see as the mechanism of a classic blend, we turn to the classification of blends captured in our research.⁴

4. BLENDS. Intended blends are a source of creative vocabulary. They abound in the media. The night before leaving for the Forum, the authors heard two on television: *manorexia* ‘a **man** diagnosed with **anorexia**’ and *murse* ‘a **purse** designed as a **man**’s accessory’. We analyze *manorexia* as a syntactic blend, because both lexemes are present in full. We analyze *murse* as a phonological blend, because the result is a single syllable containing the onset of one morpheme and the final of the other.

Sometimes, intended blends become recognized lexemes, as with *motel*. Sometimes, as with *schodnik* ‘ramp’, they do not. We have to wait to find out whether *manorexia* and *murse* make it to the dictionary. As in previous studies, the speech errors we analyze here are errors in the sense that they are not what the speaker intended to say. They are well-formed according to most linguistic criteria, but they are not what the speaker intended and not generally part of what the system normally produces. What the speaker intended is clear from context or self-correction. Most were spontaneously produced, but some were the result of erroneous attempts at reading a text or repeating a memorized text.

We take the errors in order, beginning with phonological blends, almost at the bottom of **Figure 1**. We return to the hypophonology below.

4.1. PHONOLOGICAL BLENDS. Phonological blends can be described in terms of phonological relations.

4.1.1. ENGLISH PHONOLOGICAL BLENDS. A typical set of English language phonological blends is presented in **Table 1**.

Observed	Intended
the McCalin campaign	McCain-Palin
we’ll be starting with eventage [áž]	eventing dressage [áž]
[baran]	Bahrain + Iran
one thing he said [st k] out in my mind	stuck + stood
it clits to	it hits close to

Table 1. English phonological blends.

The first two phonological blends, *McCalin* and *eventage*, are quintessential phonological blends. Two consecutive lexemes were combined into one (unofficial lexeme) using parts definable in terms of phonological structure. *McCalin* has the first syllable and second syllable onset of *McCain*, the last syllable of *Palin*, and an overlap on the peak of the second syllable. *Eventage* (announced at a horse show) has the first two syllables and the onset of the third syllable from *eventing* and the syllable final from *dressage*, pronounced [áž] as in French.

⁴ The majority of English language examples were gathered by ST in the United States. The majority of Polish language examples were gathered by students of WJS’s real language processing classes in Poland. WJS gathered examples wherever he happened to be.

With [baran] the situation was a little different. The discussion concerned Bahrain and Iran, and both lexemes had appeared in the preceding dialogue. The speaker had been talking about Bahrain, pronouncing the [h], and switched to Iran, but [baran] is what he said, without the [h]. *Stook* provides another variant. It combines the verbs of two related fixed expressions (or complex lexemes) by providing the onset and coda of the observed syllable from one verb and the peak from the other.

Clits is more complex still, because the syllable onset comes from the second lexeme and the syllable final comes from the first lexeme. It is almost as if the phonological blend was preceded by a lexo-morphemic spoonerism. If we recall examples like *a bosket of bix*, (for ‘box of biscuits’) the idea of compounded or doubled speech errors seems less surprising.

These examples provide a good overview of different types of unintended blends. More can be seen in the Polish examples.

4.1.2. POLISH PHONOLOGICAL BLENDS. A typical set of Polish language phonological blends is presented in **Table 2**.

Observed	Intended
<i>chcesz kerbat</i> ‘do you want ??’	<i>kaw</i> ‘coffee’ + <i>herbat</i> ‘tea’
<i>mostre</i>	<i>mocne</i> ‘strong’ + <i>ostre</i> ‘sharp’
<i>wzi</i> ‘??’	<i>wzi</i> ‘take’ + <i>usi</i> ‘sit down’
<i>roz dek</i>	<i>rozbolał oł dek</i> ‘(my) stomach has started hurting’

Table 2. Polish phonological blends.

In the Polish blends, *kerbat* is simply the onset to the first syllable of *kaw* and the rest of *herbat*. *Mostre* came out when either *mocne* or *ostre* could have been used in a conversation between two female students about flavors. The speaker may have changed her mind while speaking or have activated both, keeping them both active down to the phonology, where they were blended. The same might be said of *wzi*, except that it seems to be a fairly common error. WJS has heard it and it was submitted by several students from different sources. Finally, *roz dek* apparently has two gaps, one morphological, leaving the verb stem out, and the second a phonological blend between the first and second syllables of *oł dek* ‘stomach’.

Again, there is a good overview here, especially when combined with the blends in **Table 1**. We turn now to morphological blends.

4.2. MORPHOLOGICAL BLENDS. Morphological blends parallel phonological blends. Morphological blends can be described in terms of morphological relations.

4.2.1. ENGLISH MORPHOLOGICAL BLENDS. Some typical English language morphological blends are given in **Table 3**.

Observed	Intended
it makes conferences to other legislation	constant references
exspeed the limit	exceed the speed limit
a formal prosecutor	former federal
the nutraceutical community	nutritional + pharmaceutical
Berlio	Silvio Berlusconi

Table 3. English morphological blends.

The first morphological blend, *conferences*, is an actual lexeme. But the speaker had intended to say *constant references* (self-correction followed). Next, *exspeed the limit* is the same, but the lexemes are not adjacent. *A formal prosecutor*, explained above, and *the nutraceutical community* return to blends with two adjacent lexemes, though *formal* could also be analyzed as a phonological blend and *nutraceutical* may be on the verge of becoming a lexeme in its own right.

Finally, *Berlio* is also with two adjacent lexemes, but like *clits*, there seems to be a spoonerism involved as well, here semo-lexemic. *Berlio* also suggests that personal names are not necessarily encoded only as units or fixed collocations. If there was a spoonerism involved here, the given and family names must have been encoded individually.

4.2.2. POLISH MORPHOLOGICAL BLENDS. Some typical Polish morphological blends are presented in **Table 4**.

Observed	Intended
<i>autopadek</i>	<i>autokar</i> ‘tour bus’ + <i>wypadek</i> ‘accident’
<i>bezlogiczne</i>	<i>bez logiki</i> ‘without logic’ + <i>nielogiczne</i> ‘illogical’
<i>zamachowanie</i>	<i>zamach</i> ‘attack attempt’ + <i>zachowanie</i> ‘preservation’
<i>jest zwi zany wi złem</i> ‘it’s bound by ??’	<i>wi zy</i> ‘fettters’ + <i>w złem</i> ‘knot ₁ ’

Table 4. Polish morphological blends.

In the Polish morphological blends, there are no attested examples that we can say are from a blend of two consecutive lexemes, as with the English examples. *Autopadek* comes from a news report concerning a *wypadek* ‘accident’ involving an *autokar* ‘tour bus’. At least both lexemes appeared more than once in the report. The same can be said of *zamachowanie* and *wi złem*. Both posited contributors to the blends appeared more than once in the greater discourse context, again radio news reports gathered by students.

The same cannot be said of *bezlogiczne*. According to the student who gathered this example, the context permitted either *bez logiki* ‘without logic’ or *nielogiczne* ‘illogical’. Perhaps the speaker didn’t manage to decide which to use and used the blend instead; this is only speculation, yet it parallels the analysis of *mostre* in section 4.1.2. Still, the patterns observed with the phonological blends recur.

We now turn to syntactic blends.

4.3. SYNTACTIC BLENDS. Syntactic blends parallel phonological and morphological blends in both characteristics and types, but they can be described in terms of syntactic relations.

4.3.1. ENGLISH SYNTACTIC BLENDS. Some typical English syntactic blends are presented in **Table 5**.

Observed	Intended
the only incident which involving the chimp	which involved + involving
the plane was headed from Havana	from (Santiago to) Havana
we shouldn't shun away from it	shun + turn away from
following Norbert Weiner's shoes	following NW + following in NW's shoes

Table 5. *English syntactic blends.*

The first English example has *which involving*, showing a blend of two types of nominal group qualifiers, i.e., relative clauses and participial phrases. The second example simply skipped the object in the source expression and the preposition for the goal expression and melded the two. The analysis of these two is clear.

The other two examples, however, permit more than one analysis. *Following Norbert Weiner's shoes* blends two pursuit metaphors. This blend could also be analyzed as a semological blend. Similarly, *shun away from* blends two avoidance predicates. Here there are two other possibilities. The avoidance predicates could have been 'shy away from' and 'run away from', though this would still be a syntactic blend. The other possible analysis is that the speaker was unambiguously intending to say *run away from* but the *sh* of *shouldn't* perseveres. This would be a phonological timing error. At the present state of technology and given the transitory nature of our observations, it is impossible to determine which error occurred. It is important to note, however, that the current approach easily accommodates all these possibilities.

4.3.2. POLISH SYNTACTIC BLENDS. Typical Polish syntactic blends are found in **Table 6**.

Observed	Intended
<i>mam to od długa</i> 'I've had that ...'	<i>od dawna</i> 'since long ago' + <i>od długiego czasu</i> 'for a long time'
<i>dwie margarity zaprosz</i> '2 Margaritas ...'	<i>zamówi</i> 'place order' + <i>poprosz</i> 'ask for'
<i>Ania lubi inne ludzi</i> 'Anne likes ...'	<i>inne osoby</i> 'other individuals' + <i>innych ludzi</i> 'other people'

Table 6. *Polish syntactic blends.*

The first Polish example, *mam to od długa*, blends two temporal source expressions. They mean the same thing in the end. *Od dawna* focuses on the starting point of a period

stretching to the moment of speech. *Od długiego czasu* focuses on the length of time that ends in the moment of speech. What is explicit in one is implicit in the other. The second example mixes two ways of asking for something. We analyze it as a syntactic blend and not as a morphological blend because two lexemes are completely melded. *Inne ludzi* blends two ways of referring to groups of people with profound differences in grammar, both syntax and morphology. *Osoby* ‘individuals’ and *ludzie* ‘people’ both refer to human beings, but *osoby* is always feminine and *ludzie* is always masculine personal. In Sullivan and Tsang (in press) we analyze this error as a syntactic error, and it certainly is. But some informants objected that it is an unlikely TP error for a native speaker. However, as a blend it makes perfect sense.

In short, the syntactic blends parallel the kinds of blends seen on other strata.

We now turn to our few remaining blends, three potentially semological blends and our sole hypophonological blend.

4.4. FOUR REMAINING BLENDS. The problem with semological blends is not that they are rare, but that they involve blocks of text. The simplest kind of clearly semological blend WJS has ever seen involves the conflation of two steps in a rhetorical recapitulation of a logical argument. As it happens, no such clearly semological blend occurred during the period when the current data were being collected. However, there are three potentially semological blends among the examples.

The first, *in the ten days following the election were very disheartening*, presumably blends *in the ten days following the election we were very disheartened* with *the ten days following the election were very disheartening*. The former is a discourse on *we*; the latter on *the ten days*. That is, one is personal, the other impersonal, two cognitive possibilities the speaker could have chosen between. The second blend, *he’s all about mending bridges*, blends two conciliation metaphors, *mending fences* and *building bridges*. The third, *who drank all those beer*, blends mass and count noun usages. Blends two and three could be syntactic blends as well as semological blends. It all depends on how they are stored in the brains of the speakers.

ST collected our sole hypophonotactic blend: “Raker [laughter] Raker – that’s my combination of Rafer and Tiger.” The CNN anchor was introducing Rafer Weigel, who then reported a Tiger Woods story. Because of the comment, it is clear that *raker* is a blend of *rafer* and *tiger*.⁵ *Rafer* is completely voiced, except for the *f*, but in no case is that voicing phonemic. This means that phonetic voicing is turned on at the beginning, turned off at the *f*, and turned on again at the *er*. Conversely, *tiger* has a phonemically unvoiced onset *t*. The rest of the lexeme is voiced, but only the *g* is related to voice (Y) phonemically. In general, phonemically voiced obstruents are related to Y in the PT. Phonemically unvoiced obstruents and all phonemes not phonemically voiced are simply not related to Y in the PT. There is no feature [- vce] in the PT. In the hypophonotactics (HPT) everything that is not phonemically unvoiced is related to voice. In the HPT the realizational difference between phonemic and non-phonemic voice is neutralized. The result of the blend is given in (1), where (-Y) should be understood as ‘cease signaling for continuing vocal fold vibration’.

⁵ For a full understanding of the mechanism underlying the following scenario, see Sullivan 2002.

(1)	Ra	f	g	er	Blend: k
		Sp	Cl		Cl
		Lb	Do		Do
		(-Y)	Y		(-Y)

In the HPT (non-phonemic) voiced is turned on at the beginning of *rafer* and turned off in anticipation of the *f* (-Y). The blend of the two lexemes shows up in the features indicated in boldface: dorsal (Do) closure (Cl) and a lack of voicing, which is heard as a *k* by literate speakers.

The lack of more HPT blends is consistent with the relatively low number of HPT errors. The longer we continue with these studies, the more clear it is that we are less attuned to HPT errors than other kinds, excepting timing errors. Perhaps we just need to become more sensitive in our listening.

5. CONCLUSION. The majority of our examples are explained by the mechanism detailed in section 3, where it involves a rest period that leaves out morphemes while processing a sequence of two lexemes. A parallel description can be given for blends on each stratum. This does not suffice for all examples, as other speech errors and even some other mechanisms seem to be involved. We do not provide a final answer at this point, because data gathering continues and the research is far from complete.

With regard to the research so far, the short summary conclusion is that unintended blends reify the conclusions reached as a result of earlier studies. We repeat them without further comment now.

The purely relational network model of the linguistic system of a speaker of English or of Polish given in **Figure 1** is verified by a study of unintended blends. The model for these two languages, though differing greatly in detail, has five strata, each having a central TP and (vertical) relations to adjacent strata or to the cognitive store or sound, as well as (horizontal) relations directly to the cognitive store. The model encodes and decodes messages to and from sound by spreading activation. Each stratum may take short rest periods at random intervals. A lack of coordination between the rest periods can result in three kinds of timing errors and unintended blends. TP errors appear without respect to rest periods when a set of emes unordered on an upper stratum is placed in a sequence other than the one intended.

The studies continue with redundancies.

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SPEECH LEVELS AND LANGUAGE SHIFT

FRANZ MUELLER

California State University, Fullerton

Abstract. Samoans and Javanese both regard the status-related speech levels in their languages as essential elements of their language and culture. It is therefore surprising that the Javanese speech levels are now endangered while those of Samoan are vigorous and spreading. I argue that this divergent development is due to the distinct criteria for selecting speech levels: the original restriction of the polite level to chiefs leaves the Samoan system available for developing into a general politeness marking strategy whenever no chiefs are involved. By contrast, Javanese speech level usage requires the determination of interlocutors' relative social standing in almost every interaction, resulting in the disintegration of the system as it was confronted with fundamental change in the sociolinguistic ecology of Javanese, i.e., the transformation from a semi-feudal colony to an independent Indonesia with egalitarian aspirations and a new national language, Indonesian, along with it.

Keywords: Ecology of language, politeness, speech levels, Javanese, Samoan, Tongan

Languages: Javanese, Samoan, Tongan

LINGUISTS, LIKE THE JAVANESE people themselves, have long viewed the speech level system as a unique feature of the Javanese language. This goes back to their first description in a European language by Sir Stamford Raffles ([1817] 1978:356–372), who was later to become the founding governor of Singapore. Intimately intertwined with the acute sense of social hierarchy of the Javanese, the system is generally analyzed as consisting of three main registers which contain synonyms indicating the relative social status of the interlocutors. The Javanese people call the low level *ngoko*, the mid level *madya*, and the high level *krama*. Examples (1) to (3), all of which translate as 'Are you going to eat rice and cassava now?' with *krama* at the top and *ngoko* at the bottom, are a classic illustration of the system by Geertz (1960:249)¹:

- (1) Menapa sampéjan badé ne a sekul lan kaspé samenika?

¹ I have maintained the original spelling in the examples cited from Geertz (1960). The grapheme *é* represents [e]; *e* represents schwa; *ç* is a retroflex. All other examples are in the revised Indonesian orthography of 1971.

- | | | | | | | | | |
|-----|------|----------|--------|--------|-------|-----|---------|---------|
| (2) | Napa | sampéjan | adjeng | ne a | sekul | lan | kaspé | saniki? |
| (3) | Apa | kowé | arep | mangan | sega | lan | kaspé | saiki? |
| | Q | you | FUT | eat | rice | and | cassava | now |

As (1) to (3) indicate, individual words in the three levels are often formally related to one another. *Krama* words are often expanded from *ngoko* words by applying one of several phonological templates, while *madya* words are usually analyzable as contractions of *krama* forms, cf. Blust (2009:120–122) for details.

To each of these levels, high honorifics (*krama inggil*), which elevate the status of the addressee or person talked about, or low honorifics (*krama an ap*), which humble the speaker, can be added to any level. For instance, the high honorifics *pandjenengan* ‘you’, *ahar* ‘eat’, or *kalijan* ‘and’ may replace the respective lexical items in (1) to (3) to show special respect to the addressee or any person discussed. In (4), the high honorific *unjuk* ‘drink’ has been inserted into a sentence which is otherwise consistently in the *krama* level:

- (4) Cobi dipun-unjuk malih.
 please (k) PASS(k)-drink (ki) more (k)
 ‘Please drink some more.’

1. SPEECH LEVELS IN OTHER LANGUAGES. Although such speech levels are often considered to be unique to Javanese, similar systems are in fact sporadically attested throughout the Austronesian language family. They are undoubtedly founded on the fact that Austronesian societies are frequently characterized by marked social stratification, as Blust (2009:16) notes. Geographically, languages with speech level systems cluster in three areas: around Java, in eastern Indonesia, and in Polynesia. In the first of these areas, languages bordering Javanese, including Balinese, Sundanese, and Madurese, are thought to have developed speech levels due to prolonged contact (and domination by) Javanese, cf. the historical exploration by Clynes (1994) for Balinese. Interestingly, though, speech levels have failed to emerge in Malay, although Malay was the language of major states on the neighboring island of Sumatra, which had been in frequent contact with and rivals of successive Javanese states since at least the 7th century AD. Moreover, Malay had served as the lingua franca of the Indonesian archipelago since before colonial times. In Eastern Indonesia, there are noble or refined registers in Leti, Taba, and at least one variety of Tetun/Tetum (Fox 2005:101 and the sources cited there) while Sangir has remnants of an earlier speech level system (Grimes & Maryott 1994:304). Finally, in the chiefly societies of Polynesia, numerous languages have special registers associated with the nobility, including Tongan, Samoan, and others (Lynch 1998:257).

In none of these other languages is or was the system of speech levels as developed as in Javanese: The number of lexical items affected tends to be much fewer, usually up to about five hundred, whereas in Javanese the total inventory of non-low words runs to 1,300 items. Also, most languages have only two levels, with only Tongan distinguishing three levels, one for commoners, one for noblemen, and one for royalty (Lynch 1998:257). In addition, the speech levels are a purely lexical phenomenon in the Oceanic languages, whereas in Javanese, they affect both the lexicon and the morphology of the language. For instance, the Javanese passive marker is *di-* in *ngoko* but *dipun-* in *krama*; similarly, the third person possessive marker is *-e* in *ngoko* but *-ipun* in *krama*. Little has been published on the usage of the speech levels in most of these languages.

2. **SPEECH LEVELS IN SAMOAN.** Samoan speech levels are in many ways typical of these other languages. The language has two speech levels: a high register called ‘*upu fa’ loalo*’ ‘respectful words’ and a plain register. The high register, which was first discussed in Newell (1893), comprises about 450 words which, as in Javanese, are concentrated in the basic vocabulary. This high register is required whenever a person is interacting with or referring to what Milner (1961:296) terms “a chief.” Chiefs in this sense include all titled individuals, regardless of whether the title was obtained by heredity, election, or otherwise. The plain register is required when referring to oneself, one’s kin, or one’s possessions. Milner (1961:298), the only comprehensive description of the Samoan speech levels, provides the following examples; (5) is the high register equivalent of the low register (6):

- (5) Sua pe le maile
 (6) ‘ua mate le ta’ifau
 PERF dead the dog
 ‘The dog is dead.’

The Samoan speech levels involve lexical substitution only and, undoubtedly due to the rather small inventory of ‘*upu fa’ loalo*’, high register words are often vague, frequently corresponding to a whole set of distinct low register words. For instance, polite *fofoga* [fofo a] corresponds to plain *mata* ‘eye’, *isu* ‘nose’, and *gutu* ‘nose’ equally while also existing in the low register with the meaning ‘face’.

3. **VITALITY.** Given the centrality of the speech levels to both Samoan and Javanese culture, it is surprising that they have experienced opposite fates in recent decades. The Samoan speech level use remains vigorous and has been spreading, becoming a kind of general politeness marking (Lynch 1998:258). By contrast, the Javanese speech level system has been undergoing an accelerating process of disintegration, the beginnings of which were observed as early as the 1980s by Errington (1988). Blust (2009:123), in his recent survey of the Austronesian language family, has even predicted that “the system of speech levels in Javanese [...] is likely to disappear in a generation or two.”

The general health of the Samoan system as opposed to the sickly Javanese state of affairs is even more astonishing in view of the fact that earlier Western observers had made the exact opposite prediction. For instance, Violette (1879:xcii) states in the introduction to his Samoan dictionary: *Ce langage de cour [i.e., the speech levels, FM] tendra à disparaître, à mesure que les naturels se trouveront avantage mêlés aux étrangers des diverses nations qui commencent à avoir de grandes relations avec eux*².

This has patently not happened in Samoan. Samoans have been much exposed to foreign ways and ideas over the more than a century since Violette made his remark, but the speech levels remain intact. As for Javanese, the speech level system is so integral to their culture that Geertz (1960:259) had expected the new national language, Indonesian, to be added to the Javanese inventory as a quasi-fourth speech level, to “become part of the Javanese linguistic system, to

² “The court language will tend to disappear as the natives become more mixed with foreigners from various nations that are beginning to have extensive relations with them.

become one more type of sentence among those available, to be selected for use in certain special contexts and for certain special purposes.”

4. FACTORS UNDERLYING THIS DIVERGENT DEVELOPMENT.

4.1. EXPANSION OF THE SAMOAN SPEECH LEVELS. The case of Samoan shows that the intrusion of modernity by itself has proved insufficient to cause the speech level system to disintegrate, the predictions of Violette (1879:xcii) notwithstanding. I argue here that the principal factor for the divergent development of Javanese and Samoan is to be found instead in the nature of the selection criteria governing speech level usage in the two languages. These turn out to be simple and transparent in the case of Samoan, but complex and opaque in the case of Javanese. It is this contrast in selection criteria which, when confronted with societal change, has led to the breakdown of the Javanese system and the expansion of the system in Samoan.

In Samoan, the high speech level is traditionally used only with titled individuals, so its applicability in any given situation is quite straightforward: use it only when such a person is present or referred to. Samoa is an island society with a total population of fewer than a hundred thousand people in the mid-twentieth century, so most communities are small. Individuals worthy of being addressed with the *'upu fa' loalo* are usually known and certainly apparent by their demeanor. There is therefore rarely any doubt as to whether use of the polite words is called for.

This restriction of the high speech level to specific individuals, i.e., title holders, also means that it remains unused when no such person is involved. The high level is therefore potentially available as a means for showing respect to others in such situations, and this is what has led to its becoming a type of general politeness marking akin to the familiar *tu/vous* pronominal politeness distinction in European languages, albeit one involving a much larger inventory of lexical items.

4.2. BREAKDOWN OF THE JAVANESE SPEECH LEVELS. Speech level selection in Javanese is governed by multiple factors in addition to a person's rank in the nobility. These include wealth, age, profession, educational achievement, kinship, sex, the nature of the interlocutors' prior relationship, and the setting of the talk. Individual preference also plays a role; for example, the present author knows several married couples who intentionally address their spouse in the most refined *krama* level as a sign of respect for one another.

Using an inappropriate speech level is considered a major breach of social etiquette and may lead to the breakdown of a relationship. In any interaction, the Javanese must therefore determine their precise social standing vis-à-vis the person they are talking to. The greater the social distance between them, the greater the distance between the appropriate speech levels, which must furthermore be supplied with the correct assortment of high or low honorifics. This is a complex undertaking given the multiplicity of applicable criteria, not all of which are readily apparent from a person's appearance. For instance, Geertz (1960:258) notes that someone may adopt a higher level with another person than would otherwise be called for if the talk occurs at a formal occasion, such as a wedding ceremony, but a lower level if the same two people had recently had an argument.

Selecting the right speech level is complicated by the fact that various criteria may conflict with each other. What is a prosperous trader supposed to do when interacting with a nobleman working as a clerk, or the old family servant addressing a young person in the family she works

for? In order to arrive at the appropriate way of speaking, people will therefore often go through an initial probing phase when meeting someone, starting out with high-level speech and gradually moving downward by throwing in lower-level expressions before arriving at a level that both participants feel comfortable with (Hefner & Hefner 1991:64).

The modern world has brought new ways for gaining social standing. First of all, the *priyayi* nobility, on whose notions of social stratification and etiquette the whole system rests, no longer has privileged access to education and the administrative offices that require schooling, as they did during the Dutch colonial era. Now anybody can, in principle, advance through education, business, government office, or the military. Furthermore, rapid population growth has led to the rise of large cities with anonymous, often ethnically mixed populations. When meeting someone in a city, one cannot be sure that the other person even speaks Javanese, and so the default now is for initial conversations to be conducted in Indonesian, the national language, before moving on to Javanese if the other person turns out to speak Javanese also. For instance, Nababan (1985:10) found near universal competence in Indonesian among children between seven and fifteen years of age in the city of Semarang, capital of the province of Central Java: 28.1% of children spoke Indonesian as their first language, as opposed to 68.8% who spoke Javanese, and almost all non-native speakers of Indonesian (65.6%) spoke Indonesian as a second language.

The Javanese language itself is viewed by its speakers as so inherently associated with traditional culture, as opposed to modern life, that Indonesian has become the language of choice in modern settings in general, such as movies, schools, hospitals, department stores, and youth culture. People who consider themselves upwardly mobile make it a point to speak Indonesian with everyone. The media, including the now almost universally available television, is dominated by Indonesian as well, so that neologisms now largely come into Javanese from the national language.

An instructive set of experiments in this respect was conducted by Oetomo 1990. Oetomo sent a middle-aged Javanese man wearing traditional clothing to various settings associated with modern life, such as a department store, a movie house, and a highway toll booth, with instructions to address the clerks working there in *krama*; the man therefore had the look and respectful demeanor that should elicit a response in high-level Javanese from the clerk. Instead, what Oetomo (1990:70) found was that the clerks all responded in Indonesian rather than in Javanese of any kind; further, in follow-up interviews the clerks invariably reported having become offended at being addressed in what they deemed inappropriate language for the setting they were in. Clerks used terms like *dikurangajari* 'being put down' to describe how they felt, despite having been addressed in refined Javanese.

Indonesian statistical data from 1970 onward confirm the growing marginalization of the Javanese language. While national census data show the total number of Javanese speakers increasing from 51.4 million to 60.3 million between 1980 and 1990, these numbers must be interpreted against the backdrop of overall population growth in excess of 2 per cent per year during the same period; consequently, the census shows the percentage of first language speakers of Javanese decreasing from 41.3% of the Indonesian population in 1980 to 38.8% in 1990³. The percentage of first language speakers decreases for all age groups, except those over fifty; for the youngest age group measured, children five to nine years of age, the census data reveal a decline both in percentage terms and in absolute numbers, from 8,217,257 (37%) of the age group in

³ Census data cited in Sneddon (2003:203).

1980 to 8,148,421 (35.6%) in 1990⁴. Finally, the comparison of daily language use among 5 to 14 year olds in 1980 with the same cohort in 1990 shows a decrease of 16.3% from 15,361,936 to 12,851,538⁵. While the absolute decrease may look modest, it represents a significant proportional decrease because of the concurrent population growth.

5. CONCLUSION. It is thus fair to say that the Javanese world has undergone what Dixon (1991:236) has termed a dramatic “shift in cultural emphasis” which has resulted first in the usefulness of the speech levels becoming increasingly restricted (Errington 1988:43–44). Secondly, in compensation, there has been an increasing use of Indonesian by the Javanese. The rather astonishing effect of this development is that Javanese, one of the largest languages in the world with a total of 85 million speakers, is becoming marginalized in its own speech community. By contrast, Samoan society continues to be organized on a semi-feudal basis and the original, class-based use of the speech levels survives, with their expansion to politeness markers, perhaps a weak sign of democratization of Samoan society.

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SERVICE-LEARNING AND OROHA LANGUAGE PRESERVATION: A COMBINATION THAT WORKED

SHERI WELLS-JENSEN	JULI MCCARROLL	GEORGE CLAY	JORDAN LACHLER	SEAN BURKE
BRETT HOLDEN	DAN FAWCETT			
JASON WELLS-JENSEN	ANDRÉ SWARTLEY	<i>Oroha</i>	<i>University of</i>	<i>Interglacial</i>
<i>Bowling Green State University</i>		<i>Community</i>	<i>Alberta</i>	<i>Software</i>

Abstract. This paper describes a successful graduate-level service-learning course taught during the fall 2010 semester at Bowling Green State University, in which students new to linguistics assisted with the documentation of an endangered language. The paper offers suggestions for organizing such a course and discusses the factors that made the class successful.

Keywords: language preservation, service-learning, language documentation, Oroha, Austronesian

Languages: Oroha, Austronesian

WE HOPE EVERYONE READING this article will agree that linguistics is a fascinating discipline. Those of us lucky enough to have taught introductory linguistics have seen how students' attention and excitement can quicken as these (usually very new) ideas are introduced.

It is at the very beginning of study of a new discipline when enthusiasm is at its highest. The great majority of our students will not pursue linguistics as a career, but at the moment we meet them, we find them full of energy and curiosity and ready for challenges.

Of course, the greatest challenge facing linguistics today is the race to document the hundreds of languages currently in danger of extinction (Lewis 2009). Sadly, there is more work to do in this area than there are linguists to do it, which led us to a practical question: Could introductory students be called upon to help with this important work? Can students who don't know a phoneme from a photon torpedo contribute meaningfully? It has been our experience—as a team comprising linguists, educators, and English graduate students—that they can.

This paper outlines a graduate-level service-learning course taught in fall, 2010, at Bowling Green State University. The students enrolled in this course had only minimal exposure to linguistics before the semester began and no experience at all with language documentation. Despite this, they contributed meaningfully to the documentation of Oroha, a highly endangered Austronesian language of the Solomon Islands.

We discuss Bowling Green State University's institutional definition of service-learning, introduce the Oroha Project, and describe the outline of the course which made it possible for the students to do the work they did. We conclude with a set of recommendations for future courses with the hope that our work will assist others in tapping the little-used resource represented by these wonderful novice linguists.

1. SERVICE-LEARNING. Since the 1980s, college educators and educational researchers alike have been consciously employing service-learning pedagogies and debating such usage, in their attempts to connect course objectives and concepts to broader societal concerns and to assist in graduating principled, civic-minded students (Boyer 1987:213–219; Zlotkowski 1998 *passim*; Eyler and Giles 1999 *passim*; Butin 2010 *passim*). In the recent past, more serious reflection concerning the connections between service-learning and linguistics has begun (Wurr and Hellebrandt 2007 *passim*). Our graduate seminar, in fall, 2010, was part of this growing trend.

Institutional definitions of service-learning vary widely, and faculty members hoping to develop their own service-learning courses should consult their respective institution's policies or model their courses after established programs. Bowling Green State University's Office of Service-Learning provides clear guidelines for the design and implementation of service-learning courses and highlights the expectation that such courses do more than merely employ students in "community service" (BGSU).

Such credit-bearing courses involve students in meeting clearly-defined community needs and course learning outcomes, through service activities and subsequent class debriefings, reflective essays, reports, presentations or projects (Holden 2009 *passim*). Through their service and reflection, students gain greater insights into "curricular content, a broader appreciation of the discipline, and an enhanced sense of personal values and civic responsibility" (Bringle and Hatcher 1995:112–122). Ultimately, students leave the course with a better understanding of how they can "actively contribute to the welfare of a diverse, democratic society" (BGSU).

The link between the tasks students are given and the learning outcomes for the course must be clear, and the work itself must be meaningful to both the students and the community partner. It is crucial to incorporate a reflective component in the course requirements, to help students make the connections between academics and their experiences outside the class. In our case, it was clear how assistance with the Oroha Project was of benefit to the Oroha community, and the students grew to know that they were part of work which was important and impacted the world outside the university.

2. ABOUT THE OROHA PROJECT. Oroha is an Austronesian language spoken on South Malaita Island in the central Solomon Islands, and is one of the most endangered languages in the world today. The total population of the Oroha-speaking villages is approximately 600 people; however, children in the village are educated in Pijin, Sa'a or English, and the most current data from 1999 recorded by *Ethnologue* (Lewis 2009) indicates only 38 native Oroha speakers remaining, most of whom are elders.

George Clay Ramoroto Ramoanimae is one of these remaining native speakers. His educational background is not in linguistics, but in Primary Health Care and Information Technology; however, when he realized in 2006 that his language was classified as dying, he offered his knowledge and assistance to anyone in the linguistic community who might be able to help revitalize Oroha. Now, five years later, a web site has been created and has expanded to include a dictionary of over 2,000 entries (many with a sound clip of Mr. Clay pronouncing the

word), a descriptive grammar sketch, and a map gallery (<http://orohalanguage.org>). Although Mr. Clay currently resides in Finland, he travels to South Malaita whenever he can, gathering voice recordings, video, photos, and other linguistic and cultural data.

The rest of the Oroha Project team consists of a group of geographically-dispersed linguists and students who collaborate across twelve time zones using Skype (a popular Internet telephony application available from <http://www.skype.com/>) and other free or low-cost Internet technologies. With Mr. Clay's consent, five Master's-level students with little experience in linguistics were added to this existing project via the service-learning class in fall 2010.

3. PREPARATION FOR AND FIRST HALF OF THE COURSE. The first step in designing this class was to determine the kinds of tasks that are involved in a language preservation project. This in and of itself is daunting, and the list that follows is somewhat superficial and no doubt lacking in many ways. It reflects only the first author's subjective experience and is not intended as any kind of comprehensive or authoritative catalog. It is reproduced here, as it proved useful in course development.

1. Find a language to work on.
2. Locate and build rapport and trust with native speaker(s).
3. Listen to the community's concerns, needs, and goals.
4. If all is well with the first steps, proceed to finding resources for the project.
5. Set up facilities to organize and store data in consultation with the community.
6. Organize a working schedule and list of priorities with the community.
7. Work out a mutually-agreeable writing system if one does not exist.
8. Gather basic words and definitions, making recordings as possible.
9. Work out the basic grammar.
10. Choose representative culturally-appropriate texts.
11. Record and transcribe texts; gloss and translate.
- 12a. Correct/refine grammar sketch based on these.
- 12b. Correct/refine dictionary based on these.
13. Repeat steps 10 to 12 as often as possible.
14. Create pedagogical material as directed by the community.
15. Proofread, edit, modify, double-check.
16. Repeat steps 10 to 15 as often as possible.

For obvious reasons, a group of uninitiated students with only one semester to spend could not accomplish the first 5 steps, and it is unlikely that step 6 would go well for them either. As it happened, the students in the seminar joined the project somewhere around the fifth iteration of steps 10 to 15. The fact that the Oroha Project was ongoing and the relationships involved were well-established, warm, and trusting was vital to the class's success.

The next step in bringing the students into the project was to determine the technical skills they would need at each step, and which of those required skills there was time for them to master with a sufficient degree of confidence and accuracy. Therefore we expand steps 10 to 15.

10. Choose representative culturally-appropriate texts. (Mr. Clay selected the texts to be used. These came from the wealth of oral folktales from that area of the Solomon Islands,

many of which involve either animal protagonists or giants and little people, who inhabited the island long ago.)

11. Record and transcribe texts; gloss and translate. (Strong phonetic transcription skills, sufficient knowledge of the Oroha lexicon to place word boundaries, knowledge of Oroha grammar and grammars of related languages. Knowledge of glossing rules and strategies. Ability to translate from glosses with a high degree of cultural knowledge.)
- 12a. Correct/refine grammar sketch based on these. (Good knowledge of grammar of Oroha and related languages. Ability to integrate new sentence structures and correct mistakes in analysis.)
- 12b. Correct/refine dictionary based on these. (Ability to maintain dictionary files, determine which words are new, and create entries for the new words. Ability to correct and add definitions and part-of-speech determinations. Ability to analyze morphemic composition, including separating inflectional from derivational morphemes.)
13. Repeat steps 10 to 12 as often as possible.
14. Create pedagogical material as directed by the community. (Ability to simplify material and view it from a learner's perspective. Ability to think in innovative and culturally-appropriate ways to create learning scenarios.)
15. Proofread, edit, modify, double-check. (General knowledge of the whole project, including Oroha phonotactics, basic grammar and basic knowledge of glossing rules and strategies. Good grasp of English for proofreading purposes.)
16. Repeat steps 10 to 15 as often as possible.

It became apparent that our introductory students could only become meaningfully involved around step 12b—where familiarity, rather than mastery, was called for, and where original analysis gives way to data verification and editing. This made it possible to outline a set of specific learning outcomes for the class, including:

- 1. Ability to work in broad phonetic transcription.**
- 2. Ability to work with word orders and morphemic constructions that are not English-based and detect when something is not as it should be.**
- 3. Ability to do word analysis, finding inflectional morphemes, and noticing morphological composition of content words.**
- 4. Ability to proofread glosses and recognize when something is incorrectly labeled.**
- 5. Ability to manage dictionary software and determine appropriate kinds of information to include in entries.**
- 6. Ability to edit sound files.**

We also realized at this point that we would not have time in our sixteen-week semester to delve into the construction of pedagogical materials. Thus, step 14 was not pursued during the one-semester course, although the longer-term goal of creating pedagogical materials remains a high priority of the team involved in the ongoing Oroha preservation effort.

In addition, it was important to the existing Oroha team that we brought students to the project with an emotional, as well as technical, understanding of the work. This was done for two fundamental reasons. First, we wanted to give the students the gift of understanding the importance of the work they were doing and how their small contributions added to the possibility that this language would be preserved. Our second goal was the pragmatic one of

wishing to protect the work we had already done and preserve the relationship we have developed with the Oroha people. We thus hoped students would willingly assume the responsibility for ensuring that their contributions were as accurate as possible in every instance—a level of meticulous steadfastness not normally seen in the completion of linguistics homework at the introductory level.

The seventh learning outcome was added to meet perhaps our most important course goal:

7. Experience of the impact of language loss and language preservation on the world and on the particular language community affected.

This last learning outcome is essential, as we discussed earlier, for the implementation of a service-learning class based on mutual benefit. We did not want students to leave the project feeling that they had been unkindly used as copy editors and error-checkers for our benefit, even though copy editing and error-checking comprised a great deal of the work they completed.

These learning outcomes, then (with some reordering and tweaking), became the outline of the first half of the semester, during which students mastered the skills they would need for the work ahead.

There are two caveats we would like to offer before presenting the course outline: First, we have not presumed here to specify readings or particular assignments; the reader will no doubt have ideas in these areas that surpass our own (However, many of the assignments we used are collected at <http://www.FridayNightLinguistics.org/lingresources/>). Second, we learned a great deal about what is possible and what is doomed to abject failure in running such a class. The order here represents, in some places, what we think we should have done rather than a faithful recounting of what we actually did.

COURSE CALENDAR

Weeks 1–2 (and continuing): Introduction to language loss and language preservation.

Weeks 3–4: Phonetics and broad transcription.

Weeks 5–6: Word-order correlations and morphology; glossing texts.

Week 7: Dictionary construction and management.

Week 8: Sound editing.

4. SECOND HALF OF THE COURSE: SOME CAUTIONARY NOTES. At this point, halfway through the semester, we were ready to introduce students to working with Mr. Clay, whose patience and goodwill we no doubt tested on numerous occasions.

It was time for students to abandon the comfort of assignments involving analysis of carefully-edited data where there was always a pre-determined right answer; it was also time for the instructor to give up the speed and convenience of evaluating such assignments. This dramatically increased the workload associated with running the class, as each student's unique contributions to the project had to be carefully monitored. Thus, although the class as a whole accomplished more than the original team could have done without them, developing a service-learning course is not a particularly effective labor-saving device for the instructor/researcher.

It was also impossible to ensure that the tasks assigned to different students were equally challenging. Some parts of the dictionary, for example, were in worse shape than others, requiring more editing and correction. This unavoidable circumstance might not sit well with students of a fiercely traditional mindset who are accustomed to fastidiously fair assignments in

which everyone does equal amounts of work and exerts a known quantity of effort to earn a grade.

Initially, students were invited to sit in on Skype sessions, during which the instructor discussed the glossing and translation of a text with Mr. Clay while students added any new words to the online dictionary and corrected definitions as required. Later, roles were reversed; the students discussed the stories with Mr. Clay and did the glossing themselves, relying on already-completed portions of the stories as models. This was a relatively straight-forward task, guided by the instructor. The students did not need, at that point, to gloss words or separate morphemes on their own.

After this, the existing dictionary entries were divided among the students to review and edit. These entries needed to contain the Oroha word, the English translation, the English headword, the part of speech, any relevant notes to the reader (including glossed phrases or sentences employing the word), and an mp3 sound file of Mr. Clay pronouncing the word. Sound files were edited using Audacity, a free cross-platform sound-editing application (available at <http://audacity.sourceforge.net/>).

Where information was missing or incorrect, the student corrected the entry. This was by far the most linguistically complex portion of the class. It often involved morphological analysis, searching glossed stories for examples employing the word in question, and noting where information was unavailable or needed to be verified. New entries were also occasionally made at this point, and redundant entries were deleted.

Students left their initials on each entry so it could be double-checked later, but were encouraged to make the changes that they saw needed to be made. In follow-up sessions with Mr. Clay, clarifying questions were asked and the entries were further refined.

Mr. Clay provided additional recordings as necessary. Students made sure that the speech was clear and audible and that there were no long pauses before or after the word or interruptions in sound during the word. They judged the sound quality and supplied lists of words that should be re-recorded.

5. END OF THE SEMESTER: SOME FINAL THOUGHTS. The Oroha Project benefited greatly from the students' input. The dictionary grew from 1,500 words to over 2,000 words, and the quality and reliability of the entries increased, as did the number and quality of sound recordings available. The students also played a significant role in glossing three Oroha folktales. Beyond this, the students experienced language preservation first-hand in a way they could not have done otherwise. No dictionary is perfect, and we suspect there are many inaccuracies still lurking in ours, but the project is stronger as a result of the students' input.

As we think back on the semester, we offer this list of suggestions and gentle warnings to anyone thinking (as we hope some will) of offering such a class in the future.

1. The course is something of a pedagogical risk. Be clear with the students up front about the uncharted evaluative territory ahead: Some students may object when they find their portion of the work is harder (for example, containing more errors to correct or more difficulties to sort out) than the work given to other students. Even when we attempted to divide the necessary tasks equally, there was no predicting where the tricky bits would arise.
2. Running the course is a great deal of work. Although it pushed the Oroha Project ahead quickly and added to the material we now have pertaining to the Oroha language, the

- quantity of oversight was significant.
3. Students may need more support than one might expect. Field work, even field work in a supportive atmosphere, is stressful. Students needed a great deal of reassurance and support, both because things inevitably went wrong and simply because they were in a position of doing important work with minimal training.
 4. The course schedule may have to be modified mid-semester. During the second half of our semester, class time was split between discussions of Oroha material and troubleshooting of various kinds. We also wanted to spend time looking at other language preservation situations and introducing students to concepts like orthography creation (which they were not being asked to do for the Oroha Project). This may be too much! It is difficult to resist the temptation to do everything.
 5. It is possible that we were just lucky: Our students were caring, dedicated, thoughtful people who, when presented with a real challenge, rose to it with grace and good humor. One might like to think all introductory linguistics classes are so populated, but we have to admit the possibility that not all instructors will be so fortunate.
 6. The project must be carefully chosen. We were extremely fortunate that Mr. Clay embraced the idea of working with students. Our situation with the Oroha Project is perhaps unusual, and finding a match between project and class might not be as easy for every situation.
6. CONCLUSION. When we first came upon the idea of combining service-learning with an introductory-level course, doubt was high on all fronts. There were hundreds of ways the course could have failed, and the workload was tremendous for the students, for the instructor, and for Mr. Clay.
- However, we judge the experiment a success. The Oroha Project moved ahead, the class itself won a service-learning award from our university, and we introduced students to a new way of being present, active, and helpful in the real world. If our experience can be useful to others wishing to set up a similar class, we would be very willing to help.

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A HARD-SCIENCE LINGUISTICS VIEW OF TRANSLATION

LARA BURAZER DOUGLAS W. COLEMAN
University of Ljubljana University of Toledo

Abstract. The present study deals with specific aspects of translation of texts between two languages and two cultures, the source and target cultures. The task of translation is a complex one, and it includes discussion not only of possible dictionary translation equivalents but also the workings behind the so-called task of decoding and re-encoding from one language to another. This involves the discussion of expectations triggered in the source text reader and the task of the translator to match the expectations triggered in the target text reader. This can be done by anticipating the expectations of the target audience, which is based on previous experience of translators with the particular text genres. These complex subtasks are presented within the HL (Human Linguistics) model of the task of translation.

Keywords: translation studies, hard-science linguistics, sociolinguistic aspects, reader expectations, expectation procedures

Languages: English, Slovene

IN A TRADITIONAL VIEW, the role of a translator is to decode the language of a text and then re-encode it into another language. Although this view is still widely held in practice in the field of translation, it is well-known to be deficient, as it leaves out important aspects of social and psychological effect. This paper will discuss some of the key issues and then through an example under study will present an overview of a Hard-Science Linguistics (HSL) approach to translation.

1. SOME CURRENT RESEARCH BACKGROUND. There is a research project underway (Burazer, in progress) dealing with the sociolinguistic aspects of translation and the way in which and the extent to which they influence the quality of translation. The interim results of the investigation into the translation of a piece of legal document from English into Slovene have shown roughly that if we compare the quality of translation of a legal text of a translation studies student (TS student) to that of a law student, TS students will show a higher level of proficiency in micro level language skills such as the use of

grammar and vocabulary, while law students will show more skill on the macro linguistic level, such as the overall use of register (appropriate to legal texts) and overall meaning of the text.

One such example¹ shows that legal students were much less reluctant to repeat a particular certain expression within the same sentence than TS students. TS students were more concerned with the overall text form than with translating the actual meaning. Therefore, being concerned with the actual text effect on the target reader, they used reference words instead of repetition: instead of repeating [MANAGER] several times, they used the reference [NJEGA] (in English [HIM]/[HIS]), for instance.² This makes sense, since legal experts need to be aware of the possible consequences of texts or text errors in terms of meaning interpretation, therefore they need to be as careful as possible in expressing meaning in as straightforward a manner as possible. They need to make sure that there are no ambiguities.

2. THE MEANING OF A TEXT. According to Stolze (2001: 301), a translator translates what s/he understands, whether it be right or wrong, therefore we cannot speak of the source and target texts any more, but rather about a single text or message as has been understood by the translator as a reader. There is no stable meaning in texts that can be transferred as it is from one language to another. The meaning of texts is heavily dependent of the individual reader, his or her background knowledge, and the framework of previous experience that the text is going to be interpreted within.

If we refer back to the example of the use of reference instead of repeating [MANAGER] cited in the previous section, we can argue that in HL terms the previous or background experience of the students tested produced specific expectation procedures which led to specific translation choices in the process of translation. The students were not always guided by linguistic or legal restraints – the kind of information taught at schools – which led to translation error.

These same experiences also influence triggering of our expectation procedures as readers and result in either finding the text acceptable (that is compatible with our expectations) or not. The assessors selected showed preference for their field of expertise, which means that language experts paid more attention to language and not so much to the sense and meaning of the translation. On the other hand, legal experts showed more concern for the meaning of the translated texts (mostly appropriateness of vocabulary use and meaning) than the form and grammar of texts.

We can conclude that previous experience with texts as well as other general sociolinguistic experience affects the formation of expectation procedures which are then triggered in the process of translation and result in certain translation choices. On the other hand, previous experiences play an important role in text evaluation as well; therefore the level of translation quality is basically a subjective category, tied to the individual's specific expectation procedures.

¹ The example is taken from a short text, a confidentiality clause in an employment contract. The text was used in the experiment to which we refer throughout the paper (Burazer, doctoral dissertation, in progress).

² Here, [MANAGER], [HIM], and [HIS] represent channel parts in the source English text, [NJEGA], a channel part in the target Slovene text. In HSL a channel is a model of the physical energy flow or means of energy flow within a communicative interaction (Yngve 1996: 128). A channel part is a model of the functional part played by the energy flow or means of energy flow. For convenience of analysis, we break the energy flow into smaller components such as those listed immediately above.

Interestingly enough, judged by professional linguists and legal experts on the level of general text acceptability, the TS students scored higher than the legal students tested, even with the group of legal experts. This might be credited to the accidental excellence of the randomly chosen students, or perhaps to the quality of instruction at the TS department in both areas – linguistic and legal.

3. **FRAMES IN ARTIFICIAL INTELLIGENCE (AI).** Authors such as Minsky (1974) and Wilks (1973), whose efforts were in the area of AI, or what has also been called cognitive science, tried to come up with a plausible explanation of the workings of the human brain. Although they drew conclusions based on reasoning from the results arrived at in their experimental computer research, some of the reasoning could be applied to the explanation of the workings of the human brain.

One such line of reasoning is that people interpret texts (or all the input from the environment, for that matter) within so-called frames, which are represented in our brains as some sort of blueprints of previous experience. That is, as readers we interpret the text before us on the basis of previous experience. We expect there to be, for instance, an introduction, providing all the necessary data for following the content of the text, the body of the text, providing most of the information, and a conclusion, providing some general insight into what was written before. Just the way we accommodate everything else around us on a daily basis: for instance, when we enter an apartment, we expect to find rooms, in each room we expect to find furniture (stove and fridge in the kitchen, sofa in the living room, tub and sink in the bathroom, and so on).

Yet the meaning of a text can be much more easily represented within the frame of HL, which offers orthoconcepts and expectation procedures to model the complexities of human understanding in the form of linkages (as illustrated by (1) – (5) below; see Yngve 1996: 263–264, 283–286; Sypniewski in press; see also Coleman 2004).

4. **LINKAGES IN HARD-SCIENCE LINGUISTICS (HSL) AS THEY RELATE TO TRANSLATION.** A translator first needs to identify a linkage type in the source text, identify the relevant orthoconcepts present in a reader, anticipate the expectation procedures triggered and then anticipate the translation solutions which will trigger similar expectation procedures in target readers.

In a Hard Science Linguistics (HSL) framework (Yngve 1996), we can model the linkage involving an author of a text, the text itself, and a reader as (1).

$$(1) \quad [\text{Original}] = [\text{Original Author}] + [\text{L1 Text}] + [\text{L1 Reader}]$$

Here, [Original] represents the physical system including the author, the original text in the first language (L1), and the L1 reader. The text is modeled as the channel [L1 Text] and the role parts as [Original Author] and [L1 Reader]. [L1 Text], [Original Author], and [L1 Reader] thus are models of physical subsystems of the communicative interaction as a whole.

We propose the following HSL model of translation. It consists of a set of interrelated linkages.

The translator is also a reader of the book, that is, he is in the role part [Reader1] in the linkage shown in (1), above. But, he is also an observer of the effect that reading the text has on himself. We can describe this via an observing linkage, as in (2).

$$(2) \quad [\text{Obs Reaction to Original}] = [\text{Observer of Original}] + [\text{Original}]$$

As (2) shows, an observing linkage models only two subsystems: the observer and the communicative interaction being observed.

When the translator begins the task of outputting a translation into a target language text, he becomes a proxy for the original author. We model this as the additional linkage in (3).

$$(3) \quad [\text{Translation}] = [\text{Proxy Author}] + [\text{TL Text}] + [\text{TL Reader}]$$

In (3), the translator actually fulfills *two* role parts in the same linkage, both [Proxy Author] and [TL Reader]. He then observes his reaction to the translation. This we model as a second observing linkage (4).

$$(4) \quad [\text{Obs Reaction to Translation}] = [\text{Observer of Translation}] + [\text{Translation}]$$

The translator tries to match his/her reactions to [TL Text] in [Translation] to his/her reactions of [L1 Text] in [Original].

There is also a need for a third observing linkage as in (5) below:

$$(5) \quad [\text{Obs Reactions}] = [\text{Translation Evaluator}] + [\text{Obs Reaction to Original}] + [\text{Obs Reaction to Translation}]$$

Suppose the translator experiences a certain reaction as a result of reading the original; we describe his awareness of this as arising out of his observation in [Obs Reaction to Original] as (6).

$$(6) \quad [\text{Observer of Original}] < [\text{L1 Reader}] < X > >$$

When he reads the translation of his own creation, he experiences a certain effect. We describe his awareness of this as arising out of his observation in [Obs Translation] as (7).

$$(7) \quad [\text{Observer of Translation}] < [\text{TL Reader}] < Y > >$$

We describe how s/he evaluates these two effects in his/her role part as an observer of [Obs Reaction to Original] and [Obs Reaction to Translation]. This is why we need (5).

However, the translator also has an understanding of other readers of the original text and of a *potential* reader of the translation. The translator may never have actually observed anyone reading the original text and no linkage yet exists involving the reader of the translation. Thus we can also represent some properties of the translator as an evaluator in terms of orthoconcepts of other readers of the original and the potential readers, via the notation in (6)–(7).

The translator thus has a complex set of role parts in a group of interlocking linkages: as a reader in [Original] and [Translation], an observer in both [Obs Reaction to Original] and [Obs Reaction to Translation], as a proxy author in [Translation], and as an evaluator in [Obs Reactions].

The events represented in the above linkages do not comprise a simple linear sequence. Rather, in the initial stage, all four linkages asynchronously alternate back and forth — until the translator finds that his resulting properties in [L1 Reader] and [TL Reader] are in a state of near equilibrium.

The translator is the ideal subject of observation for the effects of texts on readers, because he acts as a reader and author at the same time. What the above model also shows is the synchronizing of properties between the author, the translator, and the readership.

The translator as a reader of the source text has the insight into what properties have been triggered in his plex³ during or after reading the source text. He then, as shown in the above model, needs to find a solution for a corresponding set of properties to be triggered in the reader by the target text. In order to do that, he also needs to identify the readership norms of the target readers.

A lot of discussion has been going on in TS concerning expectations of readers (Limon 2004, Baker 1998). Some have to do with text genre conventions (also Swales 1990; Toury 1999), others with readers' background knowledge on the subject, yet others with the socio-political situation in the target culture, and the like. Some aspects of translation and translation choices are even tied to the translator's reputation: some people can get away with more things than others. Another important aspect is represented by the instructions or wishes of the one who commissioned the translation (see also Vermeer 1996). The principle that the customer is always right does not escape the translation business (the reference here is to non-literary translation, of course). Sometimes the translator has to adhere to the customer's instructions for a particular solution in order to comply with their wishes and get paid.

All of the above factors contribute to triggering expectation procedures that the translator needs to match in the effect of the target text. Since we are dealing with two languages and two cultures, there is only a slim possibility that the meanings of the two texts are going to match precisely. This is difficult to achieve even between two persons, let alone between two large communities or even cultures (see Gutt 1991, Kintsch 1988).

5. THE TS AND LAW STUDENTS' TRANSLATION OF [MANAGER]. The short text referred to in this paper is the confidentiality clause of an employment contract. Here is an excerpt containing "manager": "The Manager shall be obligated to keep confidential all information of which he becomes aware during his work for the Company, which relates to or is connected with the Company's business, particularly with respect to business and trade secrets."

In the instance cited, [MANAGER] was translated by the majority of TS students tested as [MANAGER], also with an alternative spelling [MENEDŽER] /

³ V.H.Yngve defines plex as "the structure of a communicating individual represented as a long list of procedures all interrelated by their categorial and conditional properties in a complex dynamic network" (Yngve 1996: 171)

[MANADŽER]⁴, or [DIREKTOR]⁵, while the law students showed a much wider scope of vocabulary use in this instance and therefore produced translation choices such as [MANAGER] (again with alternative spellings [MENEDŽER] / [MANADŽER]), [DIREKTOR], [UPRAVNIK], [UPRAVITELJ], [RAVNATELJ], [VODJA], [DELOVODJA]. Here, note that [MANAGER] is a channel part component in the English text (a functional part of [L1 Text] in the linkage [Original]). [MANAGER], [DIREKTOR], [UPRAVNIK], [UPRAVITELJ], [RAVNATELJ], [VODJA], and [DELOVODJA] are channel part components in the Slovene text (functional parts of [TL Text] in the linkage [Translation]. See **Table 1**.

	Translation Studies Students (TSS)
[VODSTVENI DELAVEC SE ZAVEZUJE] [MENEDŽERJI SO ZAVEZANI] [POSLOVODJA SE ZAVEZUJE] [DELOVODJA JE ZAVEZAN] [ZASTOPNIK JE DOLŽAN] [LAN UPRAVE JE ZAVEZAN]	[DIREKTOR SE OBVEZUJE] [DIREKTOR JE OBVEZAN] [DIREKTOR JE ZAVEZAN] [MENEDŽER SE ZAVEZUJE] [DIREKTOR SE ZAVEZUJE] [MANADŽER MORA]

Table 1. *Translations of [the manager shall be obligated].*

Presented below are some of the instances of translations of the students tested, with commentary on and explanation of whether their translation choices for “manager” were appropriate. Appropriateness has been determined by criteria based on observable use in legal documents as well as choices offered in specialized dictionaries.

In the case cited, the possible acceptable translation solutions would be [MANAGER] (also with alternative spelling [MENEDŽER] / [MANADŽER]) or [DIREKTOR], while [UPRAVNIK], [UPRAVITELJ], [RAVNATELJ] and [VODJA] would not be appropriate in the particular context of an employment contract ([UPRAVITELJ] and [UPRAVNIK] are more appropriately used in the context of building management, [RAVNATELJ] is exclusively used in educational contexts, while [VODJA] is a general expression, a hypernym of sorts, corresponding to English LEADER or HEAD, which would not fit in this context either).

*Menedžerji so zavezani k ohranitvi zaupnosti vseh informacij, ki so jih izvedeli v
asu dela pri podjetju za katerega delajo in so povezani z delom tega podjetja, še
posebej pri poslovnih in prodajnih skrivnostih.* APPROPRIATE (LS)

⁴ There are several acceptable possibilities of spelling “manager” in Slovene: one is the same as the English original ‘manager’, another imitates Slovene pronunciation ‘menedžer’, a third possibility is a cross-breed between the original English spelling and Slovene pronunciation ‘manadžer’. ‘Menedžer’ is regarded a Slovene expression, although a borrowing, while the two alternative spellings, ‘manadžer’ and ‘manager’, are regarded as foreign expressions.

⁵ There were other translation alternatives produced by TS students, such as [VODJA], [POSLOVNEŽ], both with a more general reference, and others. But the majority used [DIREKTOR] or [MANAGER].

Vodstveni delavec se zavezuje, da bo ohranil tajne vse informacije, za katere bo izvedel v *asu* delovnega razmerja. LESS APPROPRIATE because it's more general (LS)

Poslovodja se zavezuje kot zaupne ohraniti vse informacije, do katerih bo prišel med delom za podjetje, ki se nanašajo ali so povezane z delovanjem podjetja, še posebej poslovne in trgovske skrivnosti. INAPPROPRIATE because 'poslovodja' would be used in a low management position only, such as "store manager" (LS)

Delovodja je zavezan k varovanju vseh, med delom pridobljenih podatkov, ki se povezujejo z njegovim delom v podjetju. INAPPROPRIATE because 'delovodja' is used in construction business in the sense of "in charge of a group of workers at a construction site" (LS)

Menedžer se zavezuje, da bo varoval zaupnost vseh informacij, ki jih pridobi med svojim delom za družbo in ki se povezujejo ali so povezane s posli družbe, posebej glede poslovnih in poklicnih skrivnosti. APPROPRIATE (TSS)

Manager je dolžan, da obravnava vse informacije, ki jih je pridobil v teku svojega mandata v tem podjetju, zaupno. APPROPRIATE, but less so for the Slovene linguists because of the English spelling (TSS)

Manager je zadolžen za ohranjanje zaupnosti informacij, s katerimi se seznani v *asu*, ko dela za podjetje in ki se navezujejo ali so povezane s poslovanjem podjetja. APPROPRIATE but same as previous (TSS)

Direktor se zavezuje, da bo zadržal zase vse skrivnostne informacije, s katerimi se sre uje v *asu* dela za podjetje in ki se navezujejo oziroma so povezane s poslovanjem podjetja, še posebno z upoštevanjem poslovnih in trgovinskih skrivnosti. APPROPRIATE (TSS)

Direktor se obvezuje, da ne bo izdal nobenih podatkov, do katerih bo imel dostop med svojim delom pri podjetju, in ki se navezujejo ali so povezane s poslovanjem podjetja, posebno s poslovnimi in poklicnimi skrivnostmi. APPROPRIATE (TSS)

Menedžer se zavezuje, da bo varoval zaupnost vseh informacij, ki jih pridobi med svojim delom za družbo in ki se povezujejo ali so povezane s posli družbe, posebej glede poslovnih in poklicnih skrivnosti. APPROPRIATE (TSS)

In the case of detecting the channel part [MANAGER] in the original English text, a set of possibilities is triggered and in the state of readiness to produce output to one of the following channel parts in the Slovene translation: [MANAGER] (also with alternative spellings [MENEDŽER] / [MANADŽER]), [DIREKTOR], [UPRAVNIK], [UPRAVITELJ], [RAVNATELJ], or [VODJA] (and possibly others which were not used in the translations produced by the students tested). These are all possible translations of English [MANAGER] into Slovene, but not all are appropriate to the context, register

and co-text of the target text in question. They differ in their specific context as well as frequency of use.

In [Translation] the translator as proxy author needs to make a decision, a translation choice, and then in the role of the observer of the translation in [Obs Reaction to Translation] must monitor its appropriateness.

Asynchronously, the translator's role as the observer in [Obs Reaction to Original] and [Obs Reaction to Translation] alternates to allow him to monitor the appropriateness of the translation decision on the level of the synchronization of the expectation procedures triggered by both the source and target texts. We describe how he does this in [Obs Reactions].

When the state of near equilibrium has been reached, the [Obs Reactions] becomes disengaged.

In the case of translating the channel part [MANAGER] from English into Slovene, the hypothesis is that law students have in general more experience with reading legal texts and are therefore exposed to a greater variety of legal expressions which might in part or in full coincide with the translation of [MANAGER]. The TS students, presumably having less experience with legal texts, adhered to the more obvious choices and did not show willingness to take risks with less frequent possible translation equivalents for [MANAGER].

In this particular example, previous experiences of the students tested proved less of an advantage, although this might not always be the case. This sort of creativity more often than not proves to be a positive one, but in the case of legal documents it might be a safer path to stick to the most frequent possibilities.

- (8) [law student]<select translation for [MANAGER]> =
 <context/employment contract> x <detect/[MANAGER]> x <?> ::
 <output/[DIREKTOR]>,
 <context/employment contract> x <detect/[MANAGER]> x <?> ::
 <output/[MENEDŽER]>,
 <context/employment contract> x <detect/[MANAGER]> x <?> ::
 <output/[MANADŽER]>,
 <context/building management> x <detect/[MANAGER]> x <?> ::
 <output/[UPRAVNIK]>,
 <context/building management> x <detect/[MANAGER]> x <?> ::
 <output/[UPRAVITELJ]>,
 <context/education> x <detect/[MANAGER]> x <?> ::
 <output/[RAVNATELJ]>,
 <context/?> x <detect/[MANAGER]> x <?> ::
 <output/[VODJA]>

In (8), we give a selection procedure (Yngve 1996: 255–257) as a property of [law student] — [law student]<select translation for [MANAGER]>. A selection procedure consists of a series of setting procedures, separated by commas. The setting procedures have mutually-exclusive input conditions, and thus produce different outputs based on the input conditions. A double colon (::) separates the input conditions from the output. For

example, the first setting procedure in <select translation for [MANAGER]> consists of (9).

- (9) <context/employment contract> x <detect/[MANAGER]> x <?> ::
<output/[DIREKTOR]>.

Three input conditions are specified: (a) that the textual context be an employment contract (<context/employment contract>), (b) that the translator has detected the channel part [MANAGER] in an input channel (<detect/[MANAGER]>), and a set of as-yet unspecifiable properties <?>. These are connected by Boolean AND, represented by "x"; all three conditions must be true in order for the output to be set to true. Thus, if these three conditions are met, the translator outputs the channel part [DIREKTOR]. We represent how he does this with the task procedure <output/[DIREKTOR]>. See Yngve (1996) for more about tasks (esp. 186–88) and task procedures (esp. 264–65).

Each setting procedure in the selection procedure [law student]<select translation for [MANAGER]> works more or less in the same way, but specifies different input conditions and different outputs.

6. CONCLUSION. The task of translation is a complex one, particularly so because it deals with the ever untenable cognitive processes, relevant procedures which take place in human minds. The HL model offers possibilities for representing the complexities of simultaneous tasks executing during the process of translation by modeling the different tasks of the translation process in separate linkages, by modeling the different simultaneous roles of the translator in various simultaneous linkages and offering the possibilities of managing time in terms of simultaneity and alternating of linkages.

The insight into the importance of managing previous experiences of the people involved and their relevant expectation procedures, as triggered in the process of translation, also opens a new chapter in understanding and explaining the process of translating between different languages and cultures as well as accounting for translation errors. The latter are not always as straight forward as they may seem, since there are numerous factors at play, such as the socio-cultural context, the socio-political situation, the specific wishes of the client, or even the reputation of the translator, which may or may not deem a translation solution erroneous.

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COMPUTERS AND LINGUISTICS

BERNARD SYPNIEWSKI

Rowan University – Camden Campus

Abstract: The future of computers depends on the ability of programmers to develop robust natural language understanding systems. The problem with doing so to date is a serious lack of programmable linguistic theory relating to semantics. Programmers cannot solve this problem with their current tools. Linguists have to do it for them.

Keywords: Computers, semantics, understanding, natural language processing, information theory, strings, domain

Languages: English, Latin, Mandarin Chinese

FROM THE EARLIEST DAYS OF THE COMPUTER, computer scientists and programmers have attempted to produce computers that could understand people who tried to communicate with computers in a natural language, i.e., allowing users to use a language that humans speak to each other rather than requiring the human user to use an artificial language that the computer “understood” but the user might find difficult (see, e.g., Turing 1950). While much progress has been made, no general-purpose language understanding program has been developed, much less a program that understands all human languages. This paper discusses some of the roadblocks to natural language understanding and relates them to linguistic deficiencies rather than to computer hardware or software deficiencies. We now turn our attention to two strategies that have been used to get computers to understand users.

1. LOGIC AND LANGUAGE. A general assumption amongst Natural Language Processing (NLP) programmers is that first order logic, along with some grammatical theory¹, can produce a sufficient representation of the text or speech being processed, so that a computer can react accordingly (the general operational definition of understanding used by the NLP community; see, e.g., Tanimoto (1987:325) and Pereira & Shieber (1987:92)). Programmers see the job of NLP as getting a computer to perform those actions which a human user asked for in some natural language.

¹ Usually, but not always, some version of Generative Transformational Grammar. Winograd based his system on a simplified version of Halliday’s systemic grammar Winograd (1972 passim).

Much NLP text processing² involves parsing and changing the form of the results. For example, if we received the sentence *I love Mary* as the result of a parse, some subsequent step might be to reduce the sentence to a logical form such as *love(I,Mary)*³. The precise form is computer language dependent. The same logical form might be expressed as a PYTHON list, e.g., and look like this: [love, I, Mary]⁴. Ultimately, the logical form depends on the computer language used and programmer preferences. A particular representation in a particular computer language may be easier to process than some other representation.

Pereira & Shieber (1987:91) say, "A common way to model the semantics of a natural language is to associate with each phrase a logical form, that is, an expression from some logical language that has the same truth conditions as the phrase." There are reasons to question this strategy's ability to produce linguistically acceptable results. Pereira & Shieber associate understanding with truth condition. While this is quite a common association, it is linguistically inadequate. For example, Austin's performative utterances do not have truth values. They might be tortured into some logical form but all this would do is to make form triumph over substance. In first order logic only propositions (roughly speaking, declarative sentences) have truth conditions. As any linguist knows, humans communicate with more than declarative sentences.⁵ Such an approach cannot begin to account for any non-propositional aspects of human communicative behavior. Thus, this commonly used approach to NLP cannot adequately capture large portions of human communicative behavior and, therefore, might misinterpret that portion which it can capture.

Another problem with this strategy is the inherent domain confusion in the term understanding. Tanimoto's definition (1987:325) of understanding (see above) boils down to this: "a system understands when it takes the actions that the user intended." While he recognizes that the system's action should not be accidental but part of an intentional, structured response to the user's desires, his use of understanding is specific and limited rather than the more humanlike general use of understanding. If HAL the computer opened the pod bay door after a crew member of the Discovery said "HAL, open the pod bay door," we could say that, according to Tanimoto's definition, HAL understood the command. What would HAL's response be if a crew member asked HAL whether he should paint the pod bay door blue? Under Tanimoto's definition of understanding, HAL's response might be "I don't understand, Dave." To put it another way, if a system is confronted with the natural language sentence in the form xy and does not understand it, will a change in form to $f(x,y)$ be of much help? Does a change in form help with understanding what we might call the linguistic semantics of a sentence? It is also interesting to note that a command, which is what Tanimoto's definition deals with, has no truth value in first order logic and, therefore, conflicts with Pereira & Shieber's model of semantics. A

² Speech processing is still new but it is a field which is becoming increasingly important with the widespread use of cell phones.

³ The period at the end of the form could be important. In Prolog, a language widely used in NLP, the form discussed, if followed by a period, is called a predicate and can be used in further processing. Without the period, the form produces an error for the Prolog interpreter.

⁴ While a list, for programmers, is an ordered series of items (possibly including other lists), the exact order of items in a list is up to the programmer. The programmer's concern is for consistency among lists to be processed, not necessarily in compliance with any theory.

⁵ If we assume, as seems to be the case with a number of NLP programmers, that information can only be derived from declarative sentences, we must question whether an information-only approach to NLP can ever achieve its goal of understanding natural language.

useful and properly designed system understands the user as far as Tanimoto is concerned but may not understand anything as far as Pereira & Shieber are concerned.

Compare the Tanimoto or Pereira & Shieber descriptions of understanding to a linguistic one. While I am not adopting Halliday's ideas in any way but only referring to them because they have influenced Winograd⁶ (1972), Halliday (1995:200) claims that a "higher-order semiotic organized around a grammar... has the unique property that is critical from our point of view... it has the potential for creating meaning." Halliday goes on to discuss experience and the idea that language imposes order on the world; neither Tanimoto nor Pereira & Shieber have such discussions. The issue here is not who is correct, the issue is rather the wide gulf between their concerns. The NLP approach⁷ does not consider issues other than surface processing.

NLP often exhibits domain confusion by conflating the ideas of linguistics with those of information theory, especially the mathematical theory of communication (MTC). The MTC deals with efficient delivery of communication seen as pieces of data rather than as linguistic units of some sort. The MTC is a study of information as probabilities. Floridi tells us,

MTC is not interested in the meaning, reference, relevance, reliability, usefulness, or interpretation of the information exchanged, but only in the level of detail and frequency in the uninterpreted data that constitute it. Thus, the difference between information in Shannon's sense and semantic information is comparable to the difference between a Newtonian description of the physical laws describing the dynamics of a tennis game and the description of the same game as a Wimbledon final by a commentator (Floridi 2010:48).

While there is a semantic theory of communication, it is not very well developed.

One last consideration before we move on: the strategy of changing forms may be natural language dependent.⁸ Reducing the form of a sentence to some logical form depends heavily on the syntactic structure of the sentence, especially word order. The change from *I love Mary* to *love(I, Mary)* is based on the explicit representation of the salient parts of the sentence by, in this case, individual words. Exactly what is the logical form of *amo Mariam*, which has the same meaning but is expressed in Latin? Is it something like *am-(-o, Mariam)*? This suggests that English⁹ is the paradigm for the logical form to which everything must be reduced. This also implies that, somehow, a non-English natural language sentence must be translated into English before it can be understood by a computer. What about *ni hao ma*? 'how are you?', every student's first Mandarin sentence? There is no verb and what is that *ma* thing? While I have never seen it explicitly stated, two logical forms which have the same truth value and meaning should be expressed in the same way. How do we place *I love Mary* and *Amo Mariam* into the same form? If, because of the differences between English and Latin, the forms are different, must we say that the sentences do not have the same meaning or truth value?

⁶ Terry Winograd was an early and highly influential computer scientist in the field of NLP.

⁷ My comments should be seen as being directed at traditional approaches to NLP. There are, of course, researchers doing other things of interest.

⁸ Logic may be language dependent, at least in its origins; see, e.g., Sypniewski (2001).

⁹ Or some language, probably Western European, with a similar syntactic structure that relies on an alphabet. To see why I include the requirement for an alphabet, try placing some sentence written in Egyptian Hieroglyphics into logical form.

2. DOMAIN LIMITATION. Let us examine another NLP strategy which has been used since the early days of NLP and is still very much with us. To some extent, it is a result of some notion like Tanimoto's definition of understanding. Most NLP researchers do not intend to build programs that can understand all the nuances of some natural language. Certainly, when NLP is used in commercial products, such as expert systems, NLP techniques are used for only part of the final product, usually the interface. Building a system to determine whether an applicant should receive a bank loan does not require the system to be able to discuss the prospects of the Philadelphia Phillies in this year's pennant race. A strategy called domain¹⁰ limitation has been used in cases such as these¹¹. If the system is designed to determine credit worthiness, the system only has to understand language regarding credit worthiness. Generally speaking, in systems that use this strategy, the system will initiate and guide discussions. It will ask questions, usually canned, often limit inputs, e.g., selections from a list of possible answers rather than permitting free form answers which are more difficult to process,¹² and provide limited explanations of issues that might be of interest to users.

Even given Tanimoto's definition, there must be some question about the amount of linguistic information that such a system understands. For example, if a system asks a question and requires the user to select one of three answers, can the computer be said to understand the answer that the user selected? Does the system understand the list choice *no outstanding loans* or something like *response14 = 3* if this was what was coded in the program? Recall that Tanimoto requires that a system take deliberate action as a result of its NLP routines. All programmers make mistakes. Let us assume that there was some code in the section of the program which made the decision whether to grant or reject the loan application that effectively said *if response14 = 3 then reject*. In other words, if the applicant had no outstanding loans, the applicant would not get a loan from the bank. This is an error because the bank wanted the opposite to occur. However, it is imperative for the computer because the computer follows code written with the correct syntax,¹³ therefore, it is a deliberate act for the computer; the system undertakes an action as a result of the inputs but it is not what the bank or the user wanted. Is this a failure to understand or a simple error? Once the code gets corrected to *if response14 = 3 then do not reject*, does the system understand? This raises the question of who understands: the programmer or the computer that executes the code. We will not discuss this further in this paper except to say that we should not say that *understanding* is equivalent to consistency of response.

Despite the limitations that this strategy has, domain limitation has significant benefits. One such benefit is that responses become either commands or data. Depending on how well done such a system is, it can provide the user with an experience similar to communicating with a human. Expert systems, systems that attempt to encapsulate expert analysis and diagnosis in limited domains, e.g., locomotive repair, forest management, or blood disease analysis, rely on limitations of discussions to increase their efficiency. A field called knowledge engineering has

¹⁰ The term *domain* here means "a limited subject matter". This is not the same as the use of the term *domain* in Hard Science Linguistics (HSL).

¹¹ While it is certainly true that humans limit domains of discourse, etc., rarely do humans limit these domains as much as a knowledge engineer will limit the domain of an expert system.

¹² A simple example is a list of state abbreviations. While there may be one correct way of spelling *Mississippi*, there are many more ways of misspelling it. It is time consuming and error prone to try to determine what the user meant in a free form response. It is much easier for the system and, if done properly, for the user, to allow the user to select a correctly formed and appropriate answer from a list or other limited group of responses.

¹³ Computers will carry out any foolishly written set of instructions if they are written in the proper form. The point is that the computer does not understand the intent of the program only its flow of instructions.

developed around the difficulty of determining what an expert knows and how the expert goes about diagnosing a problem. A major problem when interviewing experts is to tease out of them what they know. Someone who is an expert has decades of experience in some field may not be able to explicitly state exactly what that expertise is. A computer needs explicit information. A mechanic may be able to point to a problem in a motor, transmission or brakes just by listening. If a computer does not have a microphone, it cannot even hear.

3. STRINGS AND WORDS. A serious problem that shows itself in NLP systems is the definition of *word* (Masterman 2005). Due to the philosophical and linguistic underpinnings of computer science, computer scientists generally describe a word as a string of characters followed by a space or punctuation, a definition which is both linguistically naïve and computationally problematic. For example, this definition gives *New York* the same structure as *new shoes*. In Chinese, this leads to endlessly futile debates over which is correct: *zhong guo* ‘Chinese’ or *zhongguo*. The confusion between words and strings is especially important because one of the initial steps in NLP is to tokenize some text, i.e., to break the text into smaller constituent parts. For example, a book might be reduced to chapters, chapters to paragraphs, paragraphs to sentences and sentences to words.

Masterman shows us that there is no generally accepted definition of *word*. In a simplified list which she compiled from Chao, she shows us that, in Chinese at least, there are no fewer than nine possible senses for *word* (Masterman 2005:30–31). Different code would have to be written for each sense. A tokenizer is code which breaks a text into parts, the exact description of the parts being determined by the programmer. There are two broad ways of splitting text: divide the text into semantic units or treat the text as strings. The latter method is much more common. A string in computer science is a sequence¹⁴ of characters taken from some character set. A string has no semantic meaning.¹⁵ The string *cat* and the word *cat* only appear to be identical. Computers use strings and not words.

This simple fact has significant linguistic consequences. Different computer languages provide different ways for processing text, see, e.g., Winograd (1972). Python is currently the choice of many programmers for its ease of use, extensibility, and cost¹⁶. Python permits the creation and use of libraries and toolkits as a way of limiting the amount of work that a programmer must do. One such toolkit is called Natural Language Tool Kit (NLTK). Because of its price (free) and well-written code, the NLTK is widely used. It has become popular enough to spawn third party books, one of which is Perkins (2010).

A beautiful example of confusing strings and words comes from Perkins although he does not intend it.¹⁷ He describes the problems that the usual¹⁸ NLTK tokenizer has with contractions using the sentence *Can’t is a contraction*. By using a regular expression¹⁹ tokenizer, he replaces the *n’ t* with *not* and inserts a space in order to treat the substitution as a separate word.²⁰ The

¹⁴ The sequence can be either arbitrary or not. However, a string is always ordered. The string ABA is not the same as the string BAA even though they contain the same characters and are the same length.

¹⁵ This is because computer languages and linguistic theories are thought of as formal systems supported by formal grammars. Formal grammars use strings rather than words or some other linguistic unit.

¹⁶ Python and often Python source code are free.

¹⁷ He may not even realize it. See the discussion following.

¹⁸ There are several. Programmers love to build tools.

¹⁹ Regular expressions are pieces of code which can be assembled in many ways to build abstract representations of patterns a programmer wants to find in a piece of text. Regular expressions are powerful but difficult to use.

²⁰ The tokenizer uses a space to distinguish one “word” (actually a substring) from another. This is a technique that

result is the list [(can),(not),(is),(a),(contraction)] which can, of course, be turned back into the natural language sentence *Can not is a contraction*. His comment: “Much better! By eliminating the contractions in the first place, the tokenizer will produce cleaner results. Cleaning up text before processing is a common pattern in natural language processing” (Perkins 2010:33–34). It’s cleaner (no pesky apostrophe) and, although the result reverses the truth condition by reversing the meaning of the sentence it was processing, therefore conflicting with Pereira & Shieber, as mentioned above,²¹ it is much easier to process. The notion that strings are meaningless is so powerful that neither Perkins nor his editor noticed the problem.

It is often difficult to know how much of NLP is constrained by the programming language used. Is the programming language used selected to reflect the linguistic theory or vice versa? Programmers are practical people. They want something that works. If using meaningless strings makes programming easier, meaningless strings will be used.

One can say that Perkins is simply wrong or has made a foolish mistake. It is not as simple as that, though. Perkins wrote correct code. The code worked the way that Perkins wanted it to work. He got the result that he wanted (an easy-to-process rather than semantically accurate list²²). While the result conflicts with Pereira & Shieber, there is no automatic way of knowing that it does. *Can not* is a correct interpretation of *can’ t*. The error is not there. The error is in wanting to eliminate *can’ t* in this particular sentence.²³ The error was made before the code was written. The sentence *Can’ t is a contraction* cannot be semantically compared to the sentence *Can not is a contraction* because there is no current readily-available computational method to do so even if all we wanted to do was to determine whether the texts had the same truth values. There is no linguistic theory on which to base the processing.²⁴

We are now facing challenges to the acceptability of domain reduction. We have the internet, we have Google, we have smart phones, and who knows what else in the near future. While we might not ask a loan processing program to guess about the Phillies’ prospects this season, we might ask an online program for a loan, followed by asking another web site about the Phillies. One approach which is currently successful is to treat each of these programs as a domain limiter. However, more and more books are going on line and eventually users will start to ask not just questions like which Sherlock Holmes stories mention Professor Moriarty but what the Professor’s motivation for doing certain things was. The better the answer from the computer, the more likely the user will ask other questions outside a strictly limited domain.

We have already seen such results. A classic example was Weizenbaum’s *Eliza* program, which simulated a Rogerian therapist encouraging users to discuss their emotional states. The robot *Cog* and the robot head *Kismet* at MIT interact with people who come into their labs. In both cases, despite knowing what the limitations of the programming were, users interacted with

cannot be used with all texts in all languages. Many texts simply did not use spaces or use spaces consistently. When processing traditional Chinese ideograms, one realizes that there are no spaces. What appear to be spaces are actually the margins around the ideograms.

²¹ But not, it should be noted, with Tanimoto.

²² Not unlike examples in linguistics papers, Perkins uses an example that is taken out of context. We do not know what further processing he might want to do with the list or how he might want to process it. He might even replace the actual contraction at some future time. We just do not know, but if he did tell us he would have a lot of explaining to do.

²³ In some other sentence, such as *I can’t fall asleep* there might be no problem at all. The point is that it is the semantics of the sentence that was ignored, not the processing.

²⁴ There is also no way within first order logic to determine whether a sentence represents a true statement about the real world. Truth, in logic, is formal.

the program or robots as though they were not strictly machines but had, at least, some of the attributes of a human being. Science fiction, of course, is full of such things. What we should take from *Eliza*, *Cog*, and *Kismet*²⁵ is not that clever programmers can fool people, but that people might react in certain ways to certain types of linguistically sophisticated programs; see Turkle (2011). The more information we accumulate, the more tempting it will be to build such interfaces, whether for the web, smart phones, household appliances, or desktop programs. Programmers are likely to build mistakes into programs using current computer science ideas rather than sound linguistic ideas.

Lu & Zhang have attempted to build software that automatically understands stories and generates computer animation based on that understanding Lu & Zhang (2002). After they briefly review the literature on the computer understanding of stories, they argue that a grammar-only understanding system is insufficient for their programs. They have attempted to build common sense understanding systems as part of their software, so that the system can rule out instances of characters walking through walls, and the like. Even though their system is aimed at making cartoons for young children, they have had to allow for exceptions. Their system is quite a way from being mature.

Looked at from a Hard Science Linguistics (HSL) point of view, understanding involves the properties of communicating individuals. Being a new discipline, HSL have not done much research into the question of how understanding can be represented. Undoubtedly, it will involve orthoconcepts, see Coleman & Sypniewski (2009) and expectations, Sypniewski (2009); creating a robust HSL model of understanding is still some way off. There has been a demonstration that small HSL models can be successfully translated into computer code. This is an area undergoing active research.²⁶ The promise that HSL holds for NLP is that it can avoid the problems created by the reliance on first order logic and MTC and the belief that all meaning resides in words. The realization of this goal is still in the future but already we can see the beginnings of the path.

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²⁵ *Cog* operates on about a two-year-old human level. *Kismet* operates at a six-month-old level. These ages are approximate and may change as the robots experience the world.

²⁶ See the code examples on my website: <http://elvis.rowan.edu/~bps>. Click on “My linguistic interests”.

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TENSE, ASPECT, AND FATAL RUSSIAN EGGS

WILLIAM J. SULLIVAN and DAVID R. BOGDAN
Uniwersytet im. Marii Curie-Skłodowskiej *Ehime University*

Abstract: The thesis underlying the present study is that the unmarked tense-aspect choices of verbs in a narrative Russian text reflect the function of the verb's clause in the discourse. We apply this insight to a past-time narrative excerpted from chapter 9 of *Rokovye jajca* 'the fatal/fateful eggs' by Mixail Bulgakov and show two things. First, the system accounts for all T/A verbals in the text, participial and non-finite as well as finite. Second, we compare the results to our previous work on Polish narrative and show that this insight works equally well in both languages.

Keywords: aspect, perfective-imperfective, discourse function, narrative structure, PLOT, PRAGMATIC DESCRIPTION, TEMPORAL BACKGROUND.

Languages: Russian, Polish.

THE TENSE-ASPECT SYSTEM (T A N) applied to Polish narrative by Bogdan & Sullivan (2009)¹ is shown to apply equally well to a Russian past-time narrative excerpted from chapter 9 of *Rokovye jajca* 'the fatal/fateful eggs' by Mixail Bulgakov.² The basic distribution of unmarked tense-aspect forms for a past-time narrative is given in **Table 1** (cf. Table 7-1 in Bogdan & Sullivan 2009:109).

NARRATIVE TIME	PLOT	TEMPORAL BACKGROUND	PRAGMATIC DESCRIPTION
PAST	pa prf	pa prf	pa impf

Table 1. *Unmarked T/A forms in past-time narratives*

¹ See shorter contributory studies on the topic in volumes 29, 31, and 33 of the *LACUS forum*, available at www.lacus.org/volumes.

² *Rokk*, the collective's boss's name, is a pun on *rok* 'fate'. To the Russian psyche, fate always brings bad, often fatal consequences, hence the punning title as well. *Rokk*'s appearance spells doom for the cops.

Before applying T A N to the Russian text, we want to present some background about aspect in Russian and explain what the narrative functions communicate.

1. ASPECT FORMS AND NARRATIVE FUNCTIONS IN RUSSIAN.

1.1. ASPECT IN RUSSIAN. Most Russian verbs, like Polish verbs, are paired imperfective (*nesoveršennyj*)-perfective (*soveršennyj*). In Russian, as in Polish, aspect reflects the Aktionsart of morphologically simplex verbs. Thus *pisat'* 'write', an activity, is imperfective, and *dat'* 'give', an event, is perfective. But Russian, like Polish, has morphological markers of aspect. One set, the verb prefixes, make a verb perfective. That is, they can take an activity like *pisat'* and look at it as if it were an event: *napisat'* '(finish) writing, write completely'. If the base verb is perfective, like *dat'*, the prefixed derivative is still perfective, as in *oddat'* 'give back'.

Conversely, there is a set of imperfectivizing suffixes that can be added to the stem. They take an event and stretch it out in time, as if examining its details, or they look at it as a repeated action, which again stretches it out in time.³ So *davat'* < *dat'* and *oddavat'* < *oddat'* are both iterative, extended-time imperfectives. In the area of aspect, Slavic languages, which have morphological aspect, differ radically from English, which has no morphological aspect. Both languages, of course, exhibit Aktionsart or semantic aspect. An example of this juxtaposition can be seen in the proverb given in (1).

- (1) *Vra le it, Bog vyle it.*
 doctor medicates (imprf), God medicates (prf).
 'The doctor treats you, God cures you.'

The Russian verbs *le it* and *vyle it* differ in form only by the prefix and are found under a single entry in the dictionary. The meaning difference is indicated in different ways, depending on the size of the dictionary, but there is one thing all definitions have in common: they indicate the aspect difference. Exactly what the meaning difference is understood as depends on the context. In this case, the imperfective verb communicates an activity (hopefully a process), an attempt to help. The perfective verb communicates a successful outcome, even the result—a healthy patient. To get a similar effect, English has to use different verbs, where the contrast in Aktionsart parallels the contrast in morphological aspect.

Now in the current study we consider a past-time narrative. One previous study of something like this is Hopper (1977). Hopper correctly claims that aspect in context is a feature of discourse, i.e., a text that goes beyond a single sentence. Each sentence in a discourse is either foregrounded or backgrounded.⁴ He states that foregrounded clauses have perfective verbs and backgrounded clauses have imperfective verbs, irrespective of the pragmatics of the situation. He provides short (up to three sentences) discourses to illustrate these claims. Indeed, for past-time narratives, past perfective verbs predominate in foregrounded clauses and past imperfective verbs predominate in backgrounded clauses. Yet there are past perfective verbs that appear in clearly backgrounded clauses,

³ Remember that in Euclid's definition, two points determine a line, so from the point of view of extension in time, continuous activity and repetition are mathematically equivalent.

⁴ Note the either-or binarity and contrast it to **Table 1**.

in defiance of his prediction. Moreover, imperfective verbs sometimes appear in clearly foregrounded clauses, though this is not as common as the appearance of perfective verbs in backgrounded clauses. Extended discussion is provided in Bogdan & Sullivan (2009:16–17). Suffice it to say here that Hopper 1977 is far from airtight.

Israeli (1996) also considers the context of aspectual forms, in a way. She provides an excellent overview of work on aspect, none of it aimed at discourse, and attempts to make sense of particular usages by imagining a context in which they would sound reasonable. But her work also lacks the naturally-occurring discourse context considered in Bogdan & Sullivan 2009 and in the present study.

We turn now to the communicative effects of narrative functions and how the T/A forms in **Table 1** fulfill those functions.

1.2. NARRATIVE FUNCTIONS AND T/A FORMS. **Table 1** lists three narrative functions, all introduced and discussed in some detail in Bogdan & Sullivan 2009. For convenience, we outline those discussions here.

To begin with, note that we are dealing here with past-time narratives only. In a past-time narrative, the unmarked tense would naturally be a past tense. Unlike English, Russian has only one past tense, and it is the tense of almost every finite verb in a past-time narrative. Conversely, verbs in non-past or future tenses are temporally marked and as such are relatively quite rare. As it happens, no such verbs occur in the narrative excerpt chosen for analysis here.

PLOT function is familiar to all who analyze or read narrative. PLOT clauses communicate a series of events which advance the story from its beginning to its end. Events involve changes of state in the universe of the narrative. Change of state is communicated in Russian by perfective aspect. Thus the unmarked T/A form of a PLOT clause verb in a past-time narrative is past perfective (pa prf). Any other tense-aspect form acting as a PLOT verb is in some way marked. Only two such verbs occur in the narrative excerpt chosen for analysis here, and they are in the form of participials.

PRAGMATIC DESCRIPTION (PD) is our label for a clause that describes the surroundings in the universe of the narrative. Typically these are stative situations or ongoing activities not directly involved in the narrative. Whether they actually communicate static situations or are merely non-specific, PD clauses do not normally communicate events or changes of state. If there is no change of state, the normal aspect is imperfective, whether simple (by *Aktionsart*) or derived (morphologically), and the unmarked T/A form for a PD clause verb in past-time narrative is past imperfective (pa impf).

Often a paragraph or series of paragraphs in a narrative text may be predominantly devoted to PLOT or PD, and the T/A forms match the semantics of the narrative nicely. But it may happen that a plot paragraph contains a clause that communicates an event which is not on the main PLOT line. That is, it pertains to a particular PLOT verb and is prior to that verb. It is always subordinated to that PLOT verb semantically and often, but not always, syntactically. Normally it isn't the verb itself that is of significance to the PLOT line but the resultant state, i.e., the one that pertains after the change of state. As events in a past-time narrative, their unmarked T/A form is pa prf. Our label for this narrative function is TEMPORAL BACKGROUND (TB).⁵

⁵ A term many have objected to over the past 25 years, yet no one has come up with a better suggestion. (Or any alternative at all, for that matter. Suggestions?)

The TB function could contribute to a PD passage too, in the sense that the resultant state might pertain to the surroundings. So we expect TB clauses in PD passages. Here they might be less likely to be subordinated, yet they would still have *pa prf* verbs. This explains the anomaly (for Hopper 1977) of the appearance of perfective (i.e., presumably foregrounded) verbs in a backgrounded passage.

More extensive discussion can be found in Bogdan & Sullivan (2009, Ch. 7). We turn now to the text.

2. AN EXCERPT FROM BULGAKOV'S *ROKOVYE JAJCA*. The excerpt is given in (2) and our translation is given in (3). The immediate narrative background to the passage is easily given. Rokk, the only surviving witness to a catastrophe at a collective farm, has reported to the police. Exactly what he is trying to report is unclear to the cops, simply because of his incoherent state of shock and hysteria. It is only clear that something has happened and must be investigated. Two militiamen, Š ukin and Polajtis, are assigned to investigate. The paragraph concerns their trip from the station to the collective.

(2) 1) Š ukin s Polajtisom **stali** gotovit'sja k èkspedicii.

2) (a) U nix **byl** vsego odin èlektri eskij revol'ver, no i (b) èto **byla** xorošen'kaja zaš ita.

3) (a) Pjatidesjatzarjadnaja model' 27-ogo goda, gordost' francuzskoj texniki dlja blizkogo boja, **bila** vsego na sto šagov, no (b) **davala** pole 2 metra v diametre i (c) v ètom pole vse živoje **ubivala** napoval.

4) Promaxnut'sja **bylo** o en' trudno.

5) (a) Š ukin **nadel** blestjaš uju igrušku, a Polajtis obyknovennyj 25-zarjadnyj pojasnoj pulemetik, (b) **vzjal** obojmy, i na odnom motociklete, po utrennej rose i xolodku, (c) oni po šosse **pokatilis'** k sovxožu.

6) ([a] Rokk **šel** vsju no ', to i delo [b] **prja as'**, v pripadkax smertnogo straxa, v pridorožnju travu.)

7) (a) Motocikl **prostu al** 20 verst, (b) **otdeljavšix** stanciju ot sovxoža, v etvert' asa (c) i, (d) [kogda solnce **na alo** zna itel'no pripekat'], (c) na prigorke, (e) [pod kotorym **vilas'** re ka Top'], (c) **gljanul** saxarnyj s kolonnami dvorec v zeleni.

8) Mertvaja tišina **stojala** vokrug.

9) U samogo pod'jezda k sovxožu agenty **obognali** krest'janina na podvode.

10) (a) Tot **plelsja** (b) ne **speša**, (c) **nagružennyj** kakimi-to meškami, i (d) vskore **ostalsja** pozadi.

11) (a) Motocikletka **probežala** po mostu, i (b) Polajtis **zatrubil** v rožok, toby vyzvat' kogo-nibud'.

12) No nikto i nigde ne **otozvalsja**, za isklju eniem otdalennyx ostervenivšixsja sobak v Koncovke.

13) (a) Motocikl, (b) [zamedljaja xod], (a) **podošel** k vorotam s pozelenevšimi l'vami.

14) Zapylennye agenty, v želtyx getrax, (a) **sosko ili**, (b) **pricepili** cep'ju s zamkom k perepletu rešetki mašinu i (c) **vošli** vo dvor.

15) Tišina ix **porazila**.

- (3) 1) Shchukin and Polaitis **began** preparing for the expedition.
- 2) They **had** in all one electric revolver, but that **was** a really good defensive weapon.
- 3) The 50-round '27 model, the pride of French technology for close combat, **had** a range of only a hundred paces, but it **gave** a field of fire two meters in diameter and in this field **killed** every living thing outright.
- 4) It **would be (was)** very hard to miss.
- 5) Shchukin **donned** the glittering little toy, and Polaitis (donned) an ordinary 25-round machine pistol, **took** (spare) clips, and on one motorcycle, through the morning dew and chill, they **rolled off** down the highway to the collective.
- 6) (Rokk **walked** the whole night through, in the process **hiding** himself in the roadside grass during attacks of mortal fear.)
- 7) The motorcycle **pounded** through the 20 viorsts which **separated** the station from the collective in a quarter hour, and when the sun **began** significantly warming up things on the knolls under which **wound** the river Top', the sugar-white, columned manor house **flashed** in the greenery.
- 8) A dead silence **reigned** all around.
- 9) Right at the approach drive to the collective the agents **overtook** a peasant on a cart.
- 10) The peasant cart **was poking** along, not **hurrying**, **loaded** down with some kind of sacks or other, and **was** soon **left behind**.
- 11) The motorcycle **ran** on across the bridge and Polaitis **sounded** the horn to **alert** anybody there.
- 12) But nowhere **was** there a response by anyone, with the exception of distant, angered dogs in Koncovka.
- 13) The motorcycle, **slowing** its pace, **approached** the gate with the green-stained lions.
- 14) The dust-covered agents, in yellow gaiters, **jumped** off, **secured** the machine to the binding of the crossbar with lock and chain, and **entered** the courtyard.
- 15) The silence **struck** them.

We proceed directly to the analysis.

3. ANALYSIS OF THE *ROKOVYE JAJCA* EXCERPT ACCORDING TO T A N.

3.1. THE ANALYSIS. The analysis of the excerpt is given in **Table 2** (following page). The numbers refer the sentence numbers in (2) and the letters match the clauses within each sentence. We use the label **verbal** because we consider not only finite verbs but adjectival and adverbial participles, which are indented in **Table 2**. (cf. [6b], [7b], [10b-c], and [13b]). **Mclass** stands for the morphological class of the verbal and the **gloss** is the meaning in context as taken from the translation. Verbs in TB clauses are subclassified with regard to their function in PLOT or PD passages. We do not include participles used as pure adjectives, as they are beyond the scope of the present study. The participles do, however, reflect the meanings of the aspects and deserve separate discussion.

One comment on our translation. We render *bylo* ‘was’ in sentence 4 of (2) as ‘would be’, simply because that’s the way such a description would be given in an English text.

No.	Verbal	MClass	Gloss	T/A form	Function
1	<i>stali</i>	finite verb	began	pa prf	PLOT
2a	<i>byl</i>	fv	was	pa impf	PD
2b	<i>byla</i>	fv	was	pa impf	PD
3a	<i>bila</i>	fv	(hit)	pa impf	PD
3b	<i>davala</i>	fv	gave	pa impf	PD
3c	<i>ubivala</i>	fv	killed	pa impf	PD
4	<i>bylo</i>	fv	was (would be)	pa impf	PD
5a	<i>nadel</i>	fv	donned	pa prf	PLOT
5b	<i>vzjal</i>	fv	took	pa prf	PLOT
5c	<i>pokatilis’</i>	fv	rolled off	pa prf	PLOT
6a	<i>šel</i>	fv	walked	pa prf	PLOT/PD?
6b	<i>prja as’</i>	part adv	hiding	nonpa impf	PD
7a	<i>prostu al</i>	fv	pounded through	pa prf	PLOT
7b	<i>otdeljavšix</i>	part adj	separated	pa impf	PD
7c	<i>gljanul</i>	fv	flashed	pa prf	PLOT
7d	<i>na alo</i>	fv	had begun	pa prf	TB (PLOT)
7e	<i>vilas’</i>	fv	wound	pa impf	PD
8	<i>stojala</i>	fv	reigned	pa impf	PD
9	<i>obognali</i>	fv	overtook	pa prf	PLOT
10a	<i>plelsja</i>	fv	was poking	pa impf	PD
10b	<i>speša</i>	part adv	hurrying	nonpa impf	PD
10c	<i>nagružennyj</i>	part adj	loaded down	pa prf	TB (PD)
10d	<i>ostalsja</i>	fv	was left behind	pa prf	PLOT
11a	<i>probežala</i>	fv	ran across	pa prf	PLOT
11b	<i>zatrubil</i>	fv	sounded	pa prf	PLOT
12	<i>otozvalsja</i>	fv	called back	pa prf	PLOT
13a	<i>podošel</i>	fv	approached	pa prf	PLOT
13b	<i>zamedljaja</i>	part adv	slowing	nonpa impf	PD / PLOT
14a	<i>sosko ili</i>	fv	jumped off	pa prf	PLOT
14b	<i>pricepili</i>	fv	secured	pa prf	PLOT
14c	<i>vošli</i>	fv	entered	pa prf	PLOT
15	<i>porazila</i>	fv	struck	pa prf	PLOT

Table 2. *T / A forms and the clause functions they communicate.*

3.2. DISCUSSION. We go through the clauses according to function.

The paragraph is basically a PLOT paragraph, though there are plenty of PD and some TB clauses in the mix. It begins and ends with pa prf verbs, *stali* ‘began’ (1) and *porazila* ‘struck’ (15), nicely bracketing the whole and establishing its basic nature. In between are the plot verbs *nadel* ‘donned’, *vzjal* ‘took’, *pokatilis’* ‘rolled off’, *prostu al* ‘pounded through’, *gljanul* ‘flashed’, *na alo* ‘began’, *obognali* ‘overtook’, *ostalsja* ‘was left

behind', *probežala* 'run across', *zatrubil* 'honked', *otozvalsja* 'called back', *podošel* 'approached', *sosko ili* 'jumped off', *pricepili* 'chained', *vošli* 'entered'. Every one is a past perfective verb stem.

The six verbs in (2–4) describe the agents' weaponry. All are past imperfective. Clause 7e is an adjectival clause describing the countryside visible to the agents, and the verb is past imperfective. *Stojala* 'reigned (stood)' in 8 again describes the situation at the collective and is past imperfective. *Plęlsja* in 10a describes the activity the peasant is engaged in before, at the time when, and after he is overtaken by the agents. It is past imperfective.

Now consider (6). We do not know the source of this bracketed sentence, whether it was inserted by or at the insistence of an editor or as an afterthought by the author. The preceding chapter ends with Rokk witnessing the violent deaths of his colleagues and wife late one evening. The present chapter opens with him, hysterical and incoherent, at the police station the next morning. Sentence (6) provides a bridge to the gap. Out of context it is difficult to tell exactly what it is supposed to communicate in terms of narrative function. *Šel* 'walked' could be a plot verb, with imperfective aspect used because of the extension in time given in the adverbial phrase *vsju no* 'the whole night through'. Marked aspect verbs occur occasionally, and this would be one of them. It is also possible that this sentence is simply a PD clause, telling what caused Rokk to be in the state he is in.

Speša 'hurrying' is a present adverbial participle.⁶ It bears the same aspectual and temporal relation to *plęlsja* that *plęlsja* bears to *obognali*. Tense and aspect match. But it is at a remove from the PLOT verb *obognalsja*. Exactly the same discussion applies to *zamedljaja* 'slowing down' vis-a-vis *podošel* 'approached' in 13. Non-past tense here means the time of the activity is determined by the time of the finite verb in the sentence, and imperfective aspect communicates the lack of a change of state, relative to the finite verb.

There are two remaining verbals, both adjectival participles in adjectival clauses: *otdeljavšix* '(which) separated' in (7b) and *nagružennyj* 'loaded down' in (10c). *Otdeljavšix* is a past active participle derived from an imperfective verb. It describes a static situation. This is a classic PD situation in a past-time narrative, which requires a past imperfective verb. Conversely, *nagružennyj* is a past passive participle derived from a perfective verb. The condition of the cart is the result of someone's having loaded it with sacks, a classic TB situation. Past perfective is appropriate for a TB verb in a descriptive clause.

In short, every verbal but one appears in the T/A form predicted by the T A N hypothesis. That one exception (*šel* in [6]) fits into the list of patterned exceptions given in Bogdan & Sullivan (2009:63–64; cf. esp. [4–21], marked extension in time).

4. CONCLUSION. The T A N hypothesis, which explains the relations between narrative structure and T/A form in Polish, has been shown to work for both finite verbs and

⁶ An anonymous referee notes that certain participial forms have lost much of their verbal force, and should simply be treated as adverbs, e.g., *mol a* 'silently', and *speša* could rather be treated in the same way. While we agree on *mol a*, we prefer our analysis in the present instance. Whether synchronically or historically, tense and aspect are consistent with both analyses.

participials in a written past-time Russian narrative. We are confident it will work as well with present-time narratives and oral narratives, though the latter generally only have participles in fully adjectival contexts.

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